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Between Suicidality and Self: Effects of Mindfulness on College Students' Entrance Into and Progression Along the Continuum of Suicidality

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Between Suicidality and Self: Effects of Mindfulness on College Students' Entrance Into and Progression Along the Continuum of Suicidality

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Between Suicidality and Self: Effects of Mindfulness on College Students' Entrance Into and Progression Along the Continuum of Suicidality

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Suicide is the second leading cause of death among college students, making it a prime target for prevention initiatives on college campuses. Efforts to manage the problem of suicidality on campus frequently involve shepherding students at elevated risk into treatment services through the college counseling center. Several scholars have called for suicide prevention efforts to take a public health approach, seeking to intervene more broadly by improving the mental health of the general population that is currently at little to no risk of developing an imminent suicidal crisis. One manner of expanding these prevention efforts is to investigate those factors that preserve the emotional and mental resilience of college students facing similar life stressors and distress levels. As such, scholars of suicidality have called for closer examination of those protective factors that prevent some students—experiencing comparable levels of stress as compared to their suicidal peers—from ever entering into or progressing along the suicidality continuum. Mindfulness is a construct that has shown promise in the intervention literature for its ameliorative affect on a range of disorders and problematic coping behaviors. The possible protective benefit of dispositional levels of mindfulness at varying points along

the suicidal continuum is not well understood, and the present study seeks to remedy this gap in the literature in a large sample of college students. Using archival data from a national survey of college student coping collected in 2011 by The National Research Consortium of Counseling Centers in Higher Education, this study explored the effect of trait mindfulness levels on entry into and progression along the continuum of suicidality.

Multilevel modeling was used to explore associations between historical and demographic predictors of suicidality, dispositional mindfulness levels, self-reported distress levels during a recent stressful period, strength of intent during a recent suicidal crisis, and suicidal thoughts and behaviors along a continuum of suicidality. Results indicated that mindfulness conveys protection at the threshold of developing suicidal thoughts during a recent stressor, but is not associated with the shift from suicidal thoughts to the development of suicidal behaviors. Implications are discussed with respect to the role mindfulness can play in the development of comprehensive, population-based suicide prevention programming and mental health promotion initiatives on college campuses.

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Chapter One: Introduction

College student suicide is an issue that garners much attention from researchers, campus stakeholders, parents, students and the media. Suicide is the third leading cause of death among individuals 15-24 years old (Centers for Disease Control and Prevention [CDC], 2007) and it is believed to be the second leading cause of death among the college student population (Suicide Prevention Resource Center [SPRC], 2004).

The need for suicide prevention and mental health promotion is given prominence by recent data on the widespread prevalence of suicidal ideation on college campuses (Drum, Brownson, Burton Denmark, & Smith, 2009), highly publicized lawsuits brought against universities for student deaths by suicide (Hoover, 2005), and increased coverage and discussion of these matters amongst the popular media (Haas, Hendin, & Mann, 2003). This recent scrutiny among the popular press and lay public of the issue of suicide, and the role universities play in preventing it, has created expectations that colleges and universities claim some responsibility for the prevention of student suicide (Franke, 2004; Sontag, 2002). This has caused universities to examine the existing policies focused on suicide prevention and risk management and to increase their efforts in these domains (Arenson, 2004; Pavela, 2006). In response to this shift, the increasing recognition of the role of the university to serve as stewards of college students' mental health led Congress to pass the Garrett Lee Smith Memorial Act (2004), which provides funding to develop and implement suicide screening and prevention programming on college campuses (Stephenson, Pena-Shaff, & Quirk, 2006).

Current approaches to college suicide prevention are often delineated between primary, secondary and tertiary modes of prevention. The primary mode focuses on every member of a population of risk, aiming prevention efforts toward individuals regardless of whether they are currently in a state of heightened risk, Secondary prevention prioritizes those individuals who are exhibiting increased risk, and tertiary prevention prevents the duration and intensity of symptoms following onset of the expression of a disorder (Schwartz, 2006b). College counseling centers play a role at each of these levels of prevention, shepherding at-risk and currently suffering students into treatment, and shaping university policies (e.g. restricting access to means) and other population-based prevention strategies (e.g., stress reduction programming), which function within the primary mode of prevention (Schwartz & Friedman, 2009).

Counseling centers feel that their resources are stretched to capacity (Gallagher, 2009) and are frequently managing multiple relapsing conditions. As such, relegating intervention solely under the counseling center's purview and exclusively at the crisis—or tertiary prevention—phase, and disregarding expanding primary prevention to the entire campus population, could prove shortsighted. Further, most students who complete suicide never received services from their campus counseling center (Barr, Krylowicz, Reetz, Mistler & Rando, 2011; Kisch, Leino, & Silverman, 2005; Schwartz, 2006a). This suggests that while demand is high for campus mental health services, students most in need are not finding their way into treatment. Several scholars have called for suicide prevention efforts to take a public health approach (Davidson & Locke, 2010; Drum et al., 2009; Knox, Conwell, & Caine, 2004; Schwartz, 2006b), operating from Rose's

(1992) theorem that large numbers of individuals at low risk may result in more instances of a disorder than small numbers of individuals at high risk. Rose posits that the incidence of a disorder in a population, in this case suicide, will decrease to a greater degree by improving the health of the overall population rather than focusing efforts exclusively on those at increased risk.

Further, in studying what leads to the development of suicidality and mental disorder, some efforts have been made to move away from merely examining the disease end of the spectrum in favor of inquiring into to what keeps college students mentally hardy. College life brings with it certain levels of stress and challenge, yet most students never consider suicide or become mentally ill. This has led to increased investigation of those factors that protect individuals from developing a mental disorder or from exhibiting suicide-related behaviors (Beautrais, Collings, Erhardt & Henare, 2005; Beautrais, Gibb, Fergusson, Horwood, & Larkin, 2009; Birckmayer & Hemenway, 1999; Cha & Nock, 2009; Grossman et al., 2005; Rutter, Freedenthal, & Osman, 2008; Taliaferro, Rienzo, Pigg, Miller, & Dodd, 2009). Others have gone so far as to suggest that fostering the positive mental health of the entire population deserves broader attention in the spectrum of mental health intervention (National Research Council and Institute of Medicine [NAS-IOM], 2009). Developments in our understanding of these protective elements of intervention will serve to expand the offerings that universities can make in the area of suicide prevention and more broadly within mental health promotion.

Mindfulness training and mindfulness-based therapies have shown promise within the intervention literature for preventing the development and recurrence of suicidal

thoughts and behaviors (Barnhofer et al., 2009, 2007; Hargus, Crane, Barnhofer, & Williams, 2010; Koons et al., 2001; Segal, Williams, & Teasdale, 2002). Broadly, mindfulness has been defined among scholars as a self-regulation of attention on present-moment awareness with a stance of curiosity and acceptance (Bishop et al., 2004).

The proposed study will explore potential protection conveyed by dispositional levels of mindfulness against entry into and progression along the continuum of suicidal thoughts and behaviors. Enhancing our understanding of the process by which mindfulness fortifies students' resilience while under distress, and at varying points along the suicide continuum, may provide insight into the method by which mindfulness interventions convey protection. Additionally, exploring the circumstances wherein mindfulness bolsters students' resilience may reveal opportunities for expanding the offerings colleges and universities make in the area of suicide prevention and mental health promotion to improve the well being of the entire student population.

Chapter Two: Review of the Literature

Suicide Completion Rates Among College Students

Despite being considered the second leading cause of death on college campuses (Suicide Prevention Resource Center [SPRC], 2004), gathering accurate data on suicide rates among college students poses a challenge, as suicide completions are a low base rate phenomenon. Further, data collection methods of suicide rates have historically lacked standardized survey methodologies or sampling techniques, creating difficulty in coming to precise conclusions about the true incidence of college student suicide (Lipschitz, 1995; Silverman, 1993; Silverman, Meyer, Sloane, Raffel, & Pratt, 1997). Challenges reporting precise completion rates are compounded by the frequent underreporting of suicides—as many as 25 to 50%—that occurs due to campuses struggling to gather data on those suicides that are not classifiable as suicides (i.e. suicides mislabeled as accidents) or that occur outside the realm of university involvement (e.g. during winter or summer breaks, soon after a student drops out) (Silverman, 1993; Silverman et al., 1997).

These methodological limitations have resulted in wide variation of reported suicide rates. In one review of the literature, Lipschitz (1990) reported that rates of college student suicide have been highly inconsistent, ranging from 5 to 50 per 100,000. Lipschitz (1990) attributes this variation in findings to methodological limitations, namely sampling from populations with wide variation of student and institutional characteristics, such as socioeconomic status (SES), ethnicity, and geographic location, among others. More recently, researchers have agreed that a more accurate suicide rate is

between 6.5 and 7.5 per 100,000, and that this figure is approximately half of college students' age- and gender-matched non-student counterparts (Schwartz & Whitaker, 1990; Schwartz, 2006a, 2011; Silverman et al., 1997). Further, these authors report that nearly all this reduction is attributable to the reduced access to firearms on college campuses (Schwartz, 2006b; Silverman et al., 1997), which is the most lethal means of suicide among the general population (Miller, Azrael, & Hemenway, 2004).

Gender differences in completed suicides have been well documented in the literature, with female students having rates approximately half that of male students through the undergraduate years (Silverman et al., 1997; Schwartz & Whitaker, 1990). This difference has been attributed to the comparative lethality of methods favored by men (e.g. firearms) (Rudd, 1989). However, attending college appears to convey greater benefit to males given that male students have lower suicide completion rates relative to their nonstudent peers than female students (Schwartz, 2006a; Silverman, Meyer, Sloane, Raffel, & Pratt, 1997), and this difference is likely to be connected with the close regulation of firearms on campus (Brownson, Drum, Smith, & Burton Denmark, 2011; Schwartz & Whitaker, 1990).

The relative benefits of college life that may convey protection to all college students include access to free or low-cost health and mental health services on campus, student support services, greater peer support and mentorship, restrictions on accessibility to firearms, closer monitoring of alcohol use and a clearer sense of purpose among college students (Haas et al., 2003; Schwartz, 2006b; Silverman, 2005; Silverman et al., 1997). In spite of the relative protective environment a college campus provides, the

prevalence of completed suicide remains a key concern among administrators and campus health care providers.

College Student Suicidality

The lexicon of suicidality.

Suicidality describes the totality of suicide-related ideations and behaviors, and while the term is frequently used to suggest completed suicides, in this context suicidality will refer to suicidal thoughts and desires and a range of behaviors related to suicide, up to and including attempts to die by suicide (O'Donnell, O'Donnell, Wardlaw, & Stueve, 2004; Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007a).

Suicidal ideation has evolved in its definition, ranging from passive thoughts or fantasies about suicide to distinct plans or even attitudes toward suicide (Beck, Kovacs, & Weissman, 1979; Maris, 1992; McAuliffe, 2002). Using the nomenclature proposed by O'Carroll, Berman, Maris and Moscicki (1996) as a guide, for the purpose of this study suicidal ideation will refer more succinctly to any self-reported thoughts of engaging in suicide-related behavior. The nomenclature proposed by O'Carroll and colleagues (1996) was later revised by Silverman, Berman, Sanddal, O'Carroll and Joiner (2007a; 2007b), and this revision attempts to detail various sub-types of suicidal thoughts and behaviors based on the presence of intent and/or injury. This distinction is worth making, in that the presence of suicidal ideation does not guarantee the presence of strong suicidal intent, and in fact a low percentage of ideators endorse a strong intent to die (King, 1997; Maris, 1992; McAuliffe, 2002), while most attempt survivors report either strong intent or

ambivalence about dying by their own hand (Kessler, Borges, & Walters, 1999; Nock & Kessler, 2006). Further, O'Carroll and colleagues (1996) define *suicide* as any death resulting from intentional self-inflicted injury, *suicide attempt* as any potentially self-injurious behavior in which there is evidence of intent to die, and *suicide threats* are those behaviors that stop short of action but suggest that the individual intended self-harm.

Prevalence of suicidality on college campuses.

In contrast to completed suicides, suicidal ideation is fairly prevalent on college campuses. The National College Health Risk Behavior Survey [NCHRBS] is a large-scale, national study that is a frequently referenced survey on college health issues. This study, which included both four-year institutions and community colleges in the sample, found that approximately 10% of students had seriously considered suicide in the past year, with approximately 1.5% reporting attempting suicide (CDC-NCHRBS, 1995). However, two relatively recent and oft-cited nationwide surveys on college student health—the American College Health Association's bi-annual National College Health Assessment [ACHA-NCHA] and the survey conducted by the National Research Consortium of Counseling Centers in Higher Education—report that approximately 4 to 6% of these samples endorsed seriously considering suicide in the past 12 months, and approximately 1% reporting making an attempt in the past year (ACHA-NCHA, 2011; Drum, Brownson, Burton Denmark & Smith, 2009).

Most studies of college students show nearly equal percentages of males and females attempting suicide, with the qualification that males are more likely to be

successful when making an attempt (Gispert, Wheeler, Marsh, & Davis, 1985; Maris, 1985). Further, other surveys report that the prevalence of suicidal ideation does not vary by gender (Brener, Hassan, & Barrios, 1999; Langhinrichsen-Rohling, Arata, Bowers, O'Brien, & Morgan, 2004; Lewinsohn, Rohde, Seeley, & Baldwin, 2001; Westefeld et al., 2005). In contrast, some evidence suggests that female students may be more likely to experience suicidal thoughts than male students (Brownson et al., 2011; Stephenson et al., 2006), and that female graduate students may be at higher risk for suicide attempts than male graduate students (Brownson et al., 2011).

Suicidality can be conceptualized as a continuum, originating with lower-level, passive morbid ruminations, such as "I wish this all would end" (Rudd & Joiner, 1998), progressing to active suicidal thoughts, and finally advancing to the severe end of the spectrum, which can include creating a plan, making preparations for a suicide attempt, up to attempting suicide once or multiple times (Drum et al., 2009; Silverman et al., 2007a, 2007b). Students who begin to consider suicide as an option are at greater risk for progressing further along the continuum, and repeated episodes of suicidal thoughts or behaviors can serve to habituate the individual to suicidal actions and thus lower the threshold for taking action on the suicidal thought (Drum et al., 2009; Joiner et al., 2005; Schwartz, 2006a; Westefeld et al., 2005). Thus, it is important to gain insight into how protective and risk factors affect a student's progression along the continuum of suicidality.

Risk Factors for Suicidality

In the suicidality literature, much emphasis has been placed on determining those markers that have a significant relationship to suicide and suicidal behavior, and thus can be identified as risk factors (Schwartz, 2006a). Theorists have sought to classify risk factors for suicide as either fixed or variable and proximal or distal (Berman, Jobes, & Silverman, 2006; Moscicki, 1995). Risk factors that are fixed are those characteristics that cannot be changed within a person, such as race or gender, whereas variable risk factors, such as depression or hopelessness, can resolve of their own accord or through intervention (Kraemer, Kazdin, Offord, & Kessler, 1997). Distal risk factors are those qualities present within a person that predispose them to suicidal thoughts or behavior, such as the character trait of impulsivity or increased vulnerability due to the presence of a preexisting mental disorder (Berman et al., 2006). Proximal risk factors include situational or life events that may prompt a suicide attempt, such as a recent negative life event (Moscicki, 1995). Without the presence of a distal risk factor, other more proximal risk elements might not build up to a breaking point resulting in a suicide attempt. To date, the literature lacks a clear, integrated model for how these variables interact in contributing to suicide while also accounting for the myriad individual differences that underlie each case (Reinecke & Didie, 2005; Rudd, 2004). In effect, there is not yet a coherent understanding of the causal mechanisms underlying vulnerability factors and how they develop into suicide-related thoughts and behaviors.

Fixed risk factors.

As mentioned above, the majority of research suggests suicidal ideation does not vary by gender among college student and adolescent populations (Brener, Hassan, & Barrios, 1999; Langhinrichsen-Rohling, Arata, Bowers, O'Brien, & Morgan, 2004; Lewinsohn, Rohde, Seeley, & Baldwin, 2001; Westefeld et al., 2005), although female graduate students may be at higher risk for attempting (Brownson et al., 2011) and men exhibit higher rates of suicide completions (Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Schwartz & Whitaker, 1990; Silverman et al., 1997). Sexual orientation plays a role in suicidal risk in that lesbian, gay and bisexual students are at higher risk for seriously considering suicide and suicide attempts (D'Augelli et al., 2006; for a review see Haas et al., 2011; Kisch, Leino & Silverman, 2005). Further, several studies have identified increased risk for particular racial and ethnic groups. In analyzing the 2000 ACHA-NCHA data, Kisch, Leino, and Silverman (2005) discovered that being of Asian descent increased the risk of seriously considering suicide. Additionally, European American students are reported as endorsing more suicidal ideation than African American students (Bingham, Bennion, Openshaw, & Adams, 1994; Gutierrez, Muehlenkamp, Konick, & Osman, 2005; Kisch et al., 2005). Lastly, evidence suggests that Latina adolescents (Canino & Roberts, 2001) & American Indian/Alaska Native adolescents (LeMaster, Beals, Novins, & Manson, 2004) are at higher risk for attempts than other racial and ethnic groups.

Distal risk factors.

Cognitive and emotional factors have been examined for their association with suicide risk. Several studies suggest that problem-solving deficits are a risk factor for suicidal behavior (Rudd, Rajab, & Dahm, 1994; Wingate, Van Orden, Joiner, Williams, & Rudd, 2005) and the brooding subtype of rumination has been found to be predictive of suicidal ideation beyond the impact of negative life events (Chan, Miranda, & Surrence, 2009). It has been well established that depression and hopelessness are linked with suicidality (Beck, Brown, Berchick, Stewart, & Steer, 1990; Davila & Daley, 2000; Konick & Gutierrez, 2005; Nock et al., 2009; Weber, Metha, & Nelsen, 1997; Weishaar & Beck, 1992; Westefeld & Furr, 1987). However, not all college students who endorse depressive symptoms have considered suicide, but nearly all who have considered suicide endorse depressive symptoms (Abramson et al., 1998; Furr, Westefeld, McConnell, & Jenkins, 2001; Kisch et al., 2005). In addition, findings from an analysis of the WHO World Mental Health Surveys suggest that mood disorders are the strongest predictor of suicide attempts in wealthy, developed countries but that depression may not predict the progression from suicidal ideation to suicide attempts (Nock et al., 2009). Further delineating the role of psychopathology, psychological disorders characterized by anxiety and/or agitation (e.g., generalized anxiety disorder, posttraumatic stress disorder) or impulsivity (e.g., substance use disorders) predicted passing the threshold from thinking about suicide to taking action on suicidal thoughts (i.e., suicide attempts), suggesting that depression may foster the desire for suicide while disorders linked to agitation or impulsivity are predictive of suicidal behaviors (Nock et al., 2009). Some evidence has

pointed toward low self-esteem as a predictor of suicidal ideation, after controlling for depression (Bhar, Ghahramanlou-Holloway, Brown, & Beck, 2008; Vella, Persic, & Lester, 1996). In a review, O'Connor (2007) concluded that a subtype of perfectionism—self-critical evaluative concerns—and more concisely self-criticism were repeatedly correlated with suicidality. However, a robust evidence base supports that the strongest and most consistent predictor of a future attempt is the presence of a past attempt (Brent et al., 1999; Coryell & Young, 2005; Joiner et al., 2005; Limosin, Loze, Philippe, Casadebaig, & Rouillon, 2007; Maris, 1992; Maser et al., 2002; Owens, Booth, Briscoe, Lawrence, & Lloyd, 2003; Schwartz, 2006a; Suominen et al., 2004), and presence of multiple past attempts or deliberate self-harm (Haw, Bergen, Casey, & Hawton, 2007; Zonda, 2006).

Proximal risk factors.

Availability of firearms has been identified as a key risk factor in connection with attempted suicides (Miller, Barber, Azrael, Hemenway, & Molnar, 2009; Papadopoulos et al., 2009) and in fact may account for as many as half of all suicides (Schwartz & Whitaker, 1990). Social isolation and feeling subjectively alone appears to be a consistent and robust predictor of the development of suicidal thoughts and behaviors (Joiner & Rudd, 1996; Rubenstein, Heeren, Housman, & Rubin, 1989; Stravynski & Boyer, 2001). Further, one study found that endorsing possessing higher quality social support conveyed protection for suicidal risk, contrasted with frequency of social contacts endorsed by students (Hefner & Eisenberg, 2009). This suggests that it is the quality of

social connection that is ameliorative of suicidal risk, rather than sheer quantity of social network.

It is broadly accepted that life stress or negative life events plays a significant role in the development of psychological concerns. The phenomenon of negative life events (NLE) or negative life stress precipitating suicidal ideation and attempts has been well established in the literature (Bonner & Rich, 1987; Hirsch & Ellis, 1996; Konick & Gutierrez, 2005; Schotte & Clum, 1982). Some evidence suggests that, for the 6 months prior to the study time period, college student ideators (Schotte & Clum, 1982) and 18- to 65-year-old attempters (Paykel, Prusoff, & Myers, 1975) reported higher levels of life stress as compared to their nonideating and nonattempting counterparts, respectively.

The specific type of negative life event experienced may influence whether suicidality develops for an individual. One comprehensive review of the suicidality literature found three negative life events—family conflict, unemployment and physical illness—had the most robust support for their association with suicide completion (Van Orden et al., 2010). In a prospective design using a sample of college students, another study found that a negative attributional style specific to interpersonal events interacted with actual occurrence of negative interpersonal events and predicted an increase in suicidal ideation over a 10-week period (Joiner & Rudd, 1995). The interaction of attributional style and event type were not significant when the stressors were achievement-related, suggesting that it is the specific domain of life event interacting with attributional style that is predictive of development of suicidal thoughts.

Findings from an analysis of the WHO World Mental Health Surveys found that across 21 countries, the United States included, history of exposure to sexual and interpersonal traumas emerged as the strongest predictors of lifetime suicide ideation and attempts even after controlling for effects of other traumatic events (Stein et al., 2010). Further, repeated exposure to a number of traumatic events was found to predict increased odds of subsequent suicide ideation and attempts (Stein et al., 2010). However, results also indicated that the association between traumatic events and suicidality was largely predictive of the development of suicidal ideation, rather than predicting the progression from ideation to attempts (Stein et al., 2010).

Several studies have indicated that life stressors influence suicidal ideation for college students through hopelessness and/or depression (Bonner & Rich, 1987; Konick & Gutierrez, 2005; Rudd, 1989). This suggests that despite variable pathways to suicidality, either direct or mediated by some other psychological construct, adverse events can play a role in the cultivation of suicidal thoughts. It is therefore crucial to determine to what extent recent stressors are impacting a student's suicidality.

Perhaps comparable to the objective indicators of life stress, subjective appraisals of negative life events and stressors may hold utility in predicting development of suicidality. In his review of the research on life stress and extant conceptualizations of life stress, Monroe (2008) advocates for the use of perceived stress measures. He argues that self-report life events checklists do not provide reliable information of stress levels experienced as participants often commit errors of memory recall or introduce bias based on subjective and idiosyncratic interpretations of what constitutes a negative life event

(Monroe, 2008). In a sample of 186 college students, one study found that the interaction between perceived cumulative life stress experienced during the past year and interpersonal problem-solving skills were predictors of hopelessness after controlling for depressed mood (Bonner & Rich, 1988). These studies taken together suggest that perceived life stress or occurrence of negative life events may exert distinct influence on development of suicidal thoughts and behaviors, either through direct effects or mediated through a number of indirect pathways. These findings highlight the multifactorial nature of suicidality and the prominence of stress in explaining a portion of the variance attributable to development of suicidality.

Theories of Suicidality

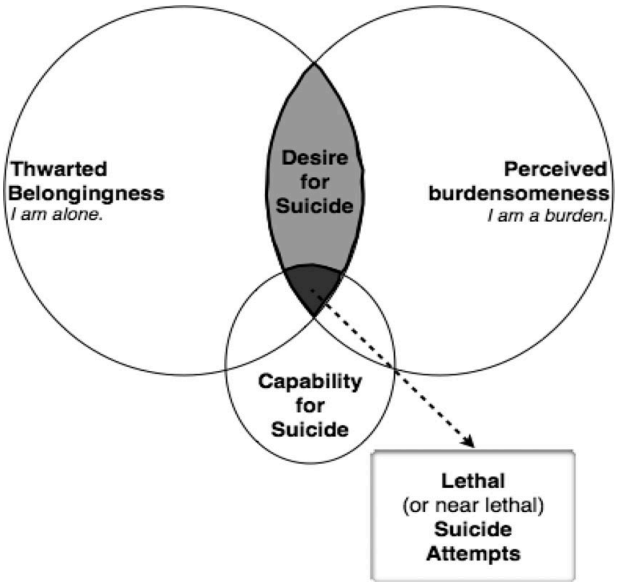
While suicidality is multiply determined, influenced by a range of determinants and pathways, exploring how these pathways link together can provide the field with integrative working models or a theoretically driven approach for understanding the etiology of suicide. Several influential suicidologists have developed just such theories in an attempt to explain the multiple pathways to suicidality. While there is no one accepted theory or integrated model to explain the range of suicidal thoughts and behaviors, three of the more prominent and/or well-supported theories in the field of suicidology will be discussed to give the reader a grounding of these working models as they relate to the potential mechanisms underlying the suicidal process.

Joiner's interpersonal theory of suicidal risk.

One conceptualization that has gained some purchase in the field is Thomas Joiner's (2005) interpersonal theory of the etiology of lethal and near-lethal suicide attempts. In his theory, Joiner posits that self-injury and suicidal behaviors are such fear-inducing acts that to be capable of attempting suicide requires an enormous ability to surmount that fear. Joiner suggests that the only individuals who have the ability to carry through on a suicide attempt are those who have, due to repeated exposure to substantial painful experiences (e.g., childhood physical abuse) and/or self-injury or attempts (e.g., past attempts, non-suicidal self-injury), become habituated to the pain that comes with the suicidal act and are thus less prone to experiencing the fear associated with the self-destructive urge. Joiner explains that this habituation, or learned fearlessness, promotes the capacity and subsequently increases competence in attempting to take one's life, but that this habituation alone is not enough to predict an attempt. Joiner theorizes that the additional element required to culminate in a suicide attempt rests with the development of a desire to die. Joiner hypothesizes that two interpersonal perceptions must occur on the part of the suicidal individual in order for this desire to be present: *perceived burdensomeness* (misconceiving that by existing one is a burden to one's loved ones and they would be better off if the individual were gone) and *failed belongingness* (the ties of social connection are diminished, and one begins to feel isolated from others and not an integrated part of a group or circle) (Van Orden et al., 2010). In this way, Joiner asserts that the desire for death develops as the individual begins to perceive that there is nothing left worth living for. According to this theory, this desire coupled with increasing

habituation to self-harm or suicidal behaviors provides the destructive combination that leads to the capacity and impulse to act on ending one's life (see Figure 1). It should be noted that Joiner's theory is intended to predict who it is that is capable of dying by suicide, or *only* those who are at elevated risk of making lethal or near-lethal suicide attempts. Thus, his theory is not intended to explain the full spectrum of suicidal risk or the initial development of suicidal thoughts.

Figure 1: Assumptions of the interpersonal theory of suicide



Note. From "The Interpersonal Theory of Suicide," by K.A. Van Orden et al., 2010, *Psychological Review*, *117*(2), 575-600. Copyright © 2010 American Psychological Association.

This theory has begun to receive empirical support validating the three main components of the theory (see Joiner et al., 2009, for a review). Joiner et al. (2005) discovered that, after controlling for established correlates of suicide, those with a history of attempts experienced increasingly severe forms of suicidality in the future as compared

to others. Joiner interprets this finding to suggest that those with a history of multiple attempts become inured to the suicidal act, becoming more practiced and thus less afraid of this form of self-injury. In a sample of undergraduates, it was discovered that the interaction between high sense of burdensomeness and low sense of belonging was predictive of suicidal desire after controlling for correlated risk factors (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). In another study, low feelings of belongingness were predictive of lifetime history of suicide attempts in a sample of methadone maintenance patients (Conner, Britton, Sworts, Joiner, et al., 2007). In two studies among a community sample of young adults, Joiner et al. (2009) tested the interactive nature of the three constructs of the theory—perceived burdensomeness, low belonging and habituation. The authors discovered that, after controlling for depression and other key suicidality covariates, the two-way interaction including burdensomeness and low belonging predicted suicidal ideation, and the three-way interaction containing all three components of the model predicted a recent suicide attempt, as compared to suicidal ideation. This study indicates that the misperceptions of perceived burdensomeness and low belongingness contribute to the *desire* to die, while the added component of prior experience with attempts predicted the *capacity* to act on that desire. Partial support was found for the theory in a sample of U.S. Air Force personnel, with the interaction of burdensomeness and acquired capability predicting past history of suicidal behaviors as compared to a non-military control group (Bryan, Morrow, Anestis, & Joiner, 2010). However, the full model with the three-way interaction did not emerge as significant for this population.

Another study examined the potential of negative urgency in magnifying the relationship between the interpersonal theory of suicide and lifetime history of suicide attempts (Anestis & Joiner, 2011). In addition to confirming the original three-part model, by utilizing a median split procedure examining negative urgency in the interaction between the three components of Joiner's (2005) theory, the analysis predicted lifetime number of suicide attempts for those with negative urgency scores at or above the median. These results point toward a particularly perilous combination of the elements of the Joiner model alongside elevations in a sense of urgency during negative affective experiences resulting in elevated risk. In sum, these studies lay the groundwork for the interpersonal theory of suicidal behavior, providing evidence for the interactive nature of both the desire and capability to die by suicide predicting one's ultimate ability to attempt to do so.

Rudd's suicidal mode: a cognitive-behavioral theory of suicidality

Another potentially fruitful and empirically derived model is found in Rudd's (2000) cognitive-behavioral conceptualization of the *suicidal mode*. Emerging from a search for an integrated framework that translates well into the therapy room, this theory is a derivation of Beck's (1996) theory of cognitive modes. As Beck conceptualizes them, modes serve to organize schemas into a higher-order unit that structures a client's belief systems. Rudd (2000) states that the central pathway for suicidality is cognition, and that suicidal clients hold a *suicidal belief system* that includes the private meanings clients assign to themselves, others and the future, consisting of the *cognitive triad.* Consistent

with Judith Beck's (1995) conceptualization, Rudd defines the core of this suicidal cognitive triad as including feelings of helplessness (i.e. "I can't do anything about my problems"), unlovability (i.e. "I'm worthless"), and poor distress tolerance (i.e. "I can't tolerate these feelings"). Further, pervading all of these core beliefs is a sense of hopelessness (i.e. "My life is hopeless"). Rudd (2000) states that the relationship between this cognitive mode and the other psychological (e.g., behavioral, emotional) and physiological systems is interactive and bi-directional, reciprocally reinforcing one another. He states that those who are predisposed to suicidality possess "faulty cognitive constructions" (p. 22), which occur as a result of or are comorbid with various psychiatric disorders. For those cognitive distortions and suicidal belief systems that are habitual in a client's life, Rudd (2000) hypothesizes that the threshold for activation of the suicidal modes is lower than those that are less charged for the individual. Rudd goes on to elaborate that the suicidal mode, which exists when an individual has an active intent to die, is most often self-limiting (i.e. acute), and clarifies that those individuals who experience persistent suicidality tend to become more sensitized to activating triggers and have lower thresholds for provoking the suicidal mode. Rudd suggests that either the occurrence of a negative life event or the flooding of an intensely negative mood can activate the suicidal mode. During the activation of this suicidal mode, the level of suicidal risk for the individual is heightened.

While empirically derived and well grounded in an established theory, direct empirical tests of Rudd's theory have not been systematically examined. However, the concept of a suicidal mode has indirect support in the literature given the evidence

supporting the efficacy of cognitive-behavioral therapy (CBT) on the treatment of depression and the preliminary evidence that cognitive therapy can reduce suicidal ideation and behavior, particularly in the short term (see Reinecke & Didie, 2005, for a review). This suggests that Rudd's principle of a suicidal mode has utility in the conceptualization of the cognitive etiology of suicidality and in particular when considering a possible framework for tailoring clinical interventions for suicidal patients.

Diathesis-stress model of suicidality.

Given the large body of evidence supporting the role of life stressors in development of suicidality (Bonner & Rich, 1987; Joiner & Rudd, 1995; Konick & Gutierrez, 2005; Rudd, 1990; Schotte & Clum, 1982; Stein et al., 2010), understanding the function of life stress in a suicidal individual's crisis deserves consideration in examining theories of the emergence of suicidality. Related to his conceptualization of the suicidal mode, in a chapter exploring treatment of suicidality in military populations, Rudd (2009) discusses the use of empirically supported theory to explain the causal cognitive, affective and environmental mechanisms at play in the development of suicidal thoughts and behaviors. He reviews literature on the most prevalent theory of the development of suicidality: the many permutations of the diathesis-stress model (Rudd, 2009). The majority of these models center around a cognitively-based diathesis that is complex with multiple determinants, including difficulties with attributions, distorted automatic thoughts, schemas and core beliefs, impaired memory functioning and attentional bias, and challenges with problem-solving and coping. In sum, an individual is

exposed to a certain load of stressors from the environment that overwhelms his/her capacity to cope, which is to some degree determined by the existence of a diathesis, or level of vulnerability, that predisposes the person to negatively appraise the event or his/her role in the event. This in turn results in negative affect, which leads to increased symptomatology, thereby triggering suicidal thoughts and behaviors.

Rudd (2009) provides empirical and theoretical support of the existence of a cognitively-based diathesis influencing development of suicidal thoughts and behaviors. Schotte & Clum (1982) examined a model that incorporated negative life events, cognitive rigidity, deficient problem solving and hopelessness. Results indicated that poor problem solvers under increased amount of stress were particularly vulnerable to suicidal behaviors, and that hopelessness and depression differentiated the high ideator group from the nonideator group. In a later study, Schotte, Cools & Payvar (1990) found that in a sample of hospitalized high-risk patients, problem-solving skills were associated with improvements in mood and suicidal symptoms (i.e., suicide intent) from Time 1 to Time 2, suggesting that deficits in problem solving may result from depression and suicidality rather than precipitating development of a mood disorder or suicidal intent. Rudd (2009) points to the diathesis that is the principal foundation of Abramson, Metalsky and Alloy's (1989) postulate that hopelessness serves as the influential cognitive diathesis in development of depression and suicidality. This model suggests that the suicidal individual makes negative attributions (internal, global and stable) about negative life events. Providing support for this hypothesis, Abramson et al. (1998) discovered that in a sample of college students hopelessness mediated the relationship between cognitive

vulnerability—in this case the degree to which participants made internal, stable and global attributions for negative and positive achievements or events—and suicidality. Rudd (2009) also highlights the cognitive diathesis central to Joiner's (2005) interpersonal theory of suicidal behaviors, arguing that while the misperceptions of thwarted belongingness and perceived burdensomeness central to this model are interpersonally derived, they find their origin in a cognitive foundation (i.e., the cognition, "I am a burden"). Rudd points to the impressive body of research that is developing in support of the interpersonal theory of suicidal behaviors. Collectively, this body of literature suggests that psychological vulnerability factors, when activated by stressful life experiences, may contribute to the affective-cognitive combination of hopelessness and depression, which may in turn culminate in suicidality.

Protective Factors

Historically, suicidality research has placed substantial emphasis on determining those factors that aid in our identification of who is at risk for suicide (Brent et al., 1999; Gould, Greenberg, Velting, & Shaffer, 2003). In a review commissioned by NIMH of over 50 instruments used to assess suicidal behaviors and risk among youth, nearly all assessed for negative factors with an emphasis on assessing for pathology (Goldston, 2000). This focus in the literature on risk factors has been largely at the expense of examining what helps people to successfully adapt. The large majority of individuals who confront stress in their lives or experience negative life events never consider suicide or develop a psychological disorder, yet this area of the literature remains relatively

unexamined (Cha & Nock, 2009; Gould et al., 2003; Rutter et al., 2008). Further yet, many individuals who exhibit suicidal behavior, depression, or possess a variety of risk factors for suicide never go on to commit suicide.

A singular focus on risk factors neglects an examination of those strengths and resilience characteristics that keep people alive. Gould and colleagues (2003) explicitly advocate for the ongoing identification of factors that protect against suicidal behavior and mitigate the impact of risk factors so that those protective factors might be enhanced in at-risk populations. Further, the most recent Institute of Medicine report calls for broadening the scope of treatment and prevention interventions, targeting interventions to the general population rather than targeting just those individuals diagnosed with a disorder (NAS-IOM, 2009). Mental health promotion is thus defined in the NAS-IOM report (2009) as an emphasis on strengthening the population's well being and ability to cope with adversity rather than merely preventing illness. Thus, health is not just the absence of disease, but also the presence of well being and resiliency.

Defining protective factors.

Several definitions of protective factors have emerged in the literature. Linehan, Goodstein, Nielsen, and Chiles (1983) first operationalized suicidal protective factors. Their research explored the belief systems of those individuals who do *not* engage in suicidal behaviors to determine if this population possesses adaptive beliefs or outlooks that are not shared by those individuals who do act on their suicidal thoughts. From this inquiry emerged the Reasons for Living Inventory (RFL), which identified six primary

reasons for living in the face of seriously considering suicide (Linehan et al., 1983). More broadly, protective factors have been defined as those variables that allow a person to defend against negative behaviors (Rutter et al., 2008). Rutter et al. (2008) further classify protective factors as either external (e.g. social support, peer accord) or internal (e.g. positive self-concept, emotional stability). Most recently, the National Research Council and Institute of Medicine's consensus report *Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities* defined protective factors as "characteristics…that are associated with a lower likelihood of problem outcomes" (NAS-IOM, 2009, p.82).

There is not clear evidence that protective factors are not simply the inverse of risk factors (see NAS-IOM, 2009, p. 82, for a review), however some research suggests that a variable can contribute to vulnerability without conveying protection at the other end for the protective impact, and inversely as well (Luthar & Latendresse, 2005). This suggests that some variables are likely to affect both the risk and protective ends of the spectrum and sum to create an overall risk of engaging in suicidal behaviors. There may still be other variables that function exclusively as risk or protective variables.

Protective factors examined.

There is a growing body of evidence that positive factors convey protection from developing suicidal thoughts and behaviors, and a small number of instruments have been developed to assess for these protective elements (Rutter, et al., 2008). Emotional intelligence, parent and family connectedness, adaptable temperament, internal locus of

control, strong problem-solving skills, spiritual faith or regular church attendance have all been identified as protective factors for suicidal ideation and behaviors (see Beautrais et al., 2005, for a review; Cha & Nock, 2009). Taliaferro and colleagues (2009) identified possessing existential well being, operationalized as having a purpose in life, as protecting against suicidal ideation for college students. Environmental protective factors have been identified, including restricted access to firearms (Grossman et al., 2005), barriers for potential jumping sites (Beautrais, Gibb, Fergusson, Horwood, & Larkin, 2009), and restricted access to alcohol (Birckmayer & Hemenway, 1999). Much as many risk factors do not carry the same level of risk for varying groups, protective factors may not generalize to all populations. For example, while religious faith and regular church attendance have generally been found to protect against suicidal thoughts and behavior, this finding has not held true for abused women (Coker et al., 2002).

In the past ten years, efforts have been underway to develop instruments that measure protective factors separately from or in tandem with risk factors (Linehan, et al., 1983; Osman, Downs, et al., 1998; Osman, Gutierrez, Kopper, Barrios, & Chiros, 1998; Osman et al., 2004). In addition to the aforementioned Reasons for Living Inventory (Linehan et al., 1983), other existing protective self-report scales include the Reasons for Living Inventory of Adolescents (Osman, Downs, et al., 1998), the Positive and Negative Suicide Ideation Inventory (Osman, Gutierrez, et al., 1998), and most recently the Suicide Resilience Inventory-25 (Osman et al., 2004). This last instrument was developed by Osman and colleagues (2004) to incorporate the construct of resilience into the assessment of suicide risk protection. The authors operationalized suicide resilience as

the "perceived ability, resources, or competence to regulate suicide-related thoughts, feelings and attitudes" (p.1351). Items in the measure were found to tap three distinct domains of suicide resilience: internal protective, external protective and emotional stability (Osman et al., 2004; Rutter, Freedenthal, & Osman, 2008). The *internal protective* domain refers to a positive belief structure surrounding oneself and one's satisfaction with life. The *external protective* domain represents one's thoughts with respect to the ability to seek out perceived helpful external resources when confronted with life stressors or suicidal ideation. Finally, the *emotional stability* domain refers to one's sense of self-efficacy with regard to regulating suicidal thoughts and behaviors when confronted with psychological symptoms or negative life events (Osman et al., 2004). Rutter et al. (2008) recently validated this measure with a sample of college students and utilized a multivariate analysis to combine risk and protective factors in the assessment of suicidal risk. Findings support its validity as an assessment of characteristics that are preventive of suicidal behavior.

It is clear that suicide behaviors are complex and consist of multiple determinants. Both risk and protective factors may occur simultaneously, merging to create an overall level of risk, and understanding how these factors function in combination can shed light on methods for preventing suicide. First, this requires a clearer understanding of those factors that are protective of suicidal risk. Understanding why some college students adapt in the face of stress while others turn to suicide can contribute to the differentiation of vulnerable and hardy individuals. In their chapter reviewing risk and protective factors for adolescents, Grosz, Zimmerman and Asnis (1995) state that understanding how

protective and risk factors work in concert could assist in our identification of high-risk individuals and prevention of their movement along the continuum of suicidality. Further, identifying those variables that convey a protective effect could be utilized to promote the health and well being of the overall population. Thus, developing prevention approaches to change those risk and protective factors that are amenable to intervention may serve to stave off the development of suicidal thoughts and behaviors in the presence of subjective distress or life stressors.

Mindfulness

There has been increasing interest among clinicians and scholars from the empirical psychological literature in mindfulness as an approach to reduce distress and decrease vulnerability to maladaptive cognitive patterns such as rumination and thought suppression. Mindfulness has a rich history within the Buddhist traditions as both a philosophical orientation toward life and as a manner of relating to one's self to reduce suffering and change the relationship one has to aversive internal experiences (Hanh, 1976). Despite the lengthy history of mindfulness in the East, it has only been in the past thirty to forty years that efforts have been made to systematically integrate principles of mindfulness into clinical interventions. Western psychology has adopted mindfulness as a form of training that increases one's awareness and ability to respond purposively—rather than reactively—to challenging states of mind that may otherwise increase distress and/or lead to psychopathology (Bishop et al., 2004). Jon Kabat-Zinn has been at the helm of the movement to propagate mindfulness in Western psychology with his

Mindfulness-Based Stress Reduction (MBSR) treatment protocol. This 8-week program was initially developed at the University of Massachusetts Medical Center for the management of chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985) and includes intensive training in a variety of forms of formal and informal mindfulness practice, including sitting and walking meditation and hatha yoga.

Operational definition of mindfulness.

Scholars have yet to achieve consensus on a concise definition of mindfulness, and there is a lively debate among scholars of which elements deserve emphasis in what is considered not to be a "unitary construct" (Grossman, 2008). Often definitions that researchers have developed to inform instrument development and an operational definition are influenced by their clinical population of interest or their a priori hypotheses of what mindfulness is. For example, Brown and Ryan (2003), viewing mindfulness as a self-regulatory skill, take as their starting point the quality of mindfulness that is a focus on attention to the present-moment, and choose not to incorporate alternative conceptualizations of mindfulness that include qualities such as intention, non-reactivity, acceptance, trust and compassion (Kabat-Zinn, 1990; Shapiro & Schwartz, 2000). These authors caution that some of the qualities currently under investigation as components of mindfulness may very well be confounds of the construct, serving instead as either antecedents or outcomes of practicing mindfulness (Brown, Ryan, & Creswell, 2007).

Several developers of psychotherapy technologies have incorporated elements of mindfulness as a component of their treatment manuals, including Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999), Dialectical Behavior Therapy (Linehan, 1993), and Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002). As such, each of these scholars conceptualizes the underlying processes of the construct of mindfulness from divergent conceptual frameworks, drawing from those elements that are relevant to their populations of interest. For example, Linehan (1994), in developing a treatment for chronically suicidal patients diagnosed with borderline personality disorder, has focused on mindfulness as an acceptance skill. Shapiro (2009) advocates that scholars distinguish mindfulness as both an *outcome* that leads to increased awareness of present-moment experience and as a *process* that serves to generate the skill of increasing this awareness. Thus, Shapiro and colleagues (2006) suggest a definition of mindfulness that incorporates the factors of intention, attention and attitude, stating that these factors result from re-perceiving one's experience, which amounts to a "shift in perspective" (Shapiro, Carlson, Astin & Freedman, 2006, p. 377). One of the most frequently cited definitions of mindfulness in the literature is that proposed by Jon Kabat-Zinn: "the awareness that emerges through paying attention on purpose, in the present-moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145).

Amidst this debate, one group of scholars formed a consensus panel to attempt to develop a single, testable operational definition of mindfulness (Bishop et al., 2004). Drawing heavily from self-regulation models (Carver & Scheier, 1990) and cognitive

models of psychopathology, the resulting definition comprised two components: 1) self-regulation of attention and 2) orientation toward experience. The authors describe *self-regulation of attention* as the ability to focus one's attention on the present-moment, thereby leading to increased awareness of mental events such as cognitions and emotions. *Orientation toward experience* is articulated as a stance or attitude toward one's experience that includes a measure of curiosity, openness and acceptance. It is worth distinguishing that this definition details the *components* of increased mindfulness that the authors hypothesize provide relief from distress, and as such Bishop and colleagues view the overall construct of mindfulness as a "metacognitive skill" (2004, p. 231). For the purpose of the proposed study, the construct of mindfulness will be considered as it corresponds with the framework supplied by Bishop and colleagues, as this operational definition takes a cognitive-oriented framework, which may prove consonant with the extant theories of the way in which suicidality develops. Further, Bishop and colleagues' conceptualization of mindfulness uses as its focus the mental mechanisms of mindfulness that increase well being and reduce maladaptive engagement with negative internal events.

Prior to explicating the conceptualization of mindfulness put forth by Bishop et al. (2004), a brief overview of the perspective offered by Jon Kabat-Zinn will be provided, as this viewpoint has been influential in developing the thinking of many scholars of mindfulness. Kabat-Zinn (1990) takes as his point of departure the work of physiologist Walter Cannon (1915) in conceptualizing the role of mindfulness in calming the psychological and physiological systems that are activated when humans are exposed to

stressors. He speaks to the "hyperarousal" that develops when individuals are exposed to chronic stressors, leading to a stress reaction that causes a cascade of nervous system responses—in particular activation of the sympathetic branch of the autonomic nervous system—which then leads to a domino effect to the other systems of the body and mind. This chronic hyperarousal then leads to long-term dysregulation of the physiological systems of the body, causing a host of problems such as hypertension, sleep disturbance, chronic pain, and psychological distress such as anxiety or depression. Kabat-Zinn posits that problems arise when individuals engage in maladaptive coping strategies when encountering these stressors, utilizing self-destructive avoidance behaviors (e.g., workaholism, substance abuse) to suppress feelings of anxiety related to life stressors. These coping strategies, Kabat-Zinn suggests, are sufficient in the short-term for alleviating stress, yet often result in increased stress over the long term.

Kabat-Zinn suggests that this cycle of stressor followed by "stress reactivity" followed by even greater stress loads on the physiological and psychological system can be halted by utilizing adaptive coping strategies. He contends that mindfulness falls into this adaptive category. Kabat-Zinn suggests that the increased present-moment awareness afforded by mindfulness creates a form of pause for an individual, allowing him or her to experience the full range of thoughts, emotions and physical sensations connected to stress. In this way, the individual can choose whether or not to exacerbate the effects of the stressor, adding to the stress reaction either by suppressing thoughts about stress in the short-term or engaging in immediate reactive responses to the stressor. Mindfulness, Kabat-Zinn claims, provides an alternative response to stress that by broadening

awareness of the present-moment allows faster recovery of mental equilibrium and homeostasis of the physiological systems when exposed to a stressor.

Self-regulation of attention.

The framework put forth by the Bishop et al. (2004) consensus panel highlights *self-regulation of attention* as the first component of mindfulness, acting as the ability to focus one's attention on the present-moment. Over time mindfulness may improve one's ability to attend to and identify internal stimuli (e.g., thoughts, emotions, judgments) as they occur in the present-moment (Bishop et al., 2004). By sustaining attention on these internal events an individual may become more flexible about what experiences to attend to, shifting set as necessary. This runs counter to more habitual modes of attention in which an individual either: 1) blunts awareness of the present-moment by engaging in diversionary tactics to avoid contact with aversive internal stimuli, or 2) becomes preoccupied by those thoughts, caught up in the stream of mental events in a ruminative fashion. The flexibility of attention fostered by mindfulness—refraining from rumination whilst stopping oneself from distracting from internal events—may lead an individual to attend to the conceptual process that is occurring, viewing thoughts, interpretations and emotions as simply events to be observed rather than elaborated upon or reinforced (Bishop et al., 2004). Distancing from the internal milieu in this way, but not suppressing, may broaden an individual's perspective. If one is directing less active energy toward manipulating or avoiding the stream of internal events, one might predict that resources would be liberated to take in new information. Rather than holding preconceived notions

about what will occur and thus seeking information that verifies those preconceptions (e.g., confirmatory bias), an individual regulating attention in a mindful way may approach each new experience with an openness and willingness to merely observe these internal events unfold.

Empirical support of self-regulation of attention.

Research is beginning to provide support for the possibility that mindfulness fosters the process of self-regulation of attention. Using the Implicit Association Test, one study found that a moderating relationship existed between mindfulness and the degree of association between participants' implicit and self-reported explicit emotions (Brown & Ryan, 2003). Specifically, the authors found that those participants who were higher in dispositional mindfulness levels had a stronger link between their implicit and explicit affect than those endorsing lower dispositional mindfulness levels. This suggests that individuals higher in mindfulness may possess greater attunement to internal states, thereby being more capable of identifying those emotions explicitly. Masicampo and Baumeister (2007) argue that mindfulness may function as a form of self-control exercise, likening self-control processes to developing a muscle, and they cite research that found a relationship between improvements in self-control exercises (i.e., physical exercise) and significant decreases in perceived stress, better emotion control and regulatory behaviors (e.g., study habits, maintenance of household chores) (Oaten & Cheng, 2006).

Thought suppression and rumination, two internal processes thought to be conceptually counter to mindfulness and present-moment attention, appear to be reduced by interventions designed to increase mindfulness capacity. Research shows that group interventions incorporating mindfulness training are associated with a reduction in self-reported attempts to suppress unwanted thoughts in populations struggling with depression (Hepburn, Crane, Barnhofer, et al., 2009) and alcohol use (Bowen, Witkiewitz, Dillworth, & Marlatt, 2007). Chambers, Lo and Allen (2008), using a repeated measures design, found that following a 10-day intensive retreat, novice meditators showed significant improvements in depressive symptoms, the reflection form of rumination, working memory and sustained attention as compared to a control group. The authors posited that reductions in the brooding subscale of the rumination measure (Ruminative Responses Scale) were not observed in this sample as it was obtained from a non-clinical population. Another study discovered that increases in mindfulness following an exposure-based intervention incorporating a mindfulness-training component were predictive of reductions in avoidance and rumination for those meeting the criteria for a major depressive disorder (Kumar, Feldman, & Hayes, 2008).

Investigating a hypothesis that mindfulness meditation is a more effective alternative to traditional distraction in interrupting the ruminative cycle following a mood induction, one study examined the differential effects of rumination, distraction and mindfulness conditions on self-reported present-moment mood (Broderick, 2005). The mood induction involved having participants read increasingly depressing statements (e.g., “I just don’t care about anything”), with Barber’s *Adagio for Strings* playing in the

background, and requesting that participants focus on and elaborate upon the sad feeling for a period of 2 minutes. As hypothesized, the study found that the mindfulness condition significantly attenuated participants' self-reported negative mood levels following exposure to the dysphoric mood induction, as compared to the distraction or rumination conditions. The distraction condition was associated with a similar attenuation of negative mood, however, to a lesser degree than the mindfulness condition (Broderick, 2005).

Mindfulness-based cognitive therapy (MBCT) was developed to reduce the rate of relapse that is commonly observed in major depressive disorder, and combines traditional cognitive therapy with mindfulness skills training (Segal et al., 2002). Crane and colleagues (2008) utilized a self-discrepancy model to test the effects of an 8-week MBCT group for a population with a history of mood disorder. These authors found a significant time x group interaction, with those in the MBCT group reporting significantly fewer self-discrepancy ratings (i.e., perceived discrepancies between ideal and actual self concept) from pre- to post- than participants in a wait-list control group. This interaction effect was a result of those in the control group showing a non-significant increase in self-discrepancy ratings and those in the MBCT group showing a non-significant decrease in self-discrepancy ratings. This suggests that participating in a MBCT group can lead to the adoption of a more adaptive ideal self-concept and may limit increases in self-discrepancy compared to those yet to receive treatment. Another study found in a sample of college students presenting to a college counseling center that the ability to let go of negative thoughts and frequency of negative cognitions was

predicted by dispositional mindfulness levels. Participation in a mindfulness-based clinical intervention was associated with decreased self-reported frequency of negative cognitions and increased ability to let go of negative automatic thoughts (Frewen, Evans, Maraj, Dozois, & Partridge, 2008). Taken together, these studies are consistent with the contention that one product of mindfulness is the cultivation of present-moment awareness and attention toward internal stimuli, even when those internal stimuli are negative. This increased awareness may decrease habitual modes of relating to internal mental events, such as rumination and thought suppression, thereby broadening the possible repertoire of responses in any given moment.

After reviewing these findings, Williams (2008) posits that the concentration deficits observed as part of the sequela of depression are more central to the disorder than originally believed, and argues that mindfulness increases awareness and the ability to switch into a "whole mode of mind" (p. 725). He suggests that the depressed mode of mind engages a discrepancy-based processing approach, utilizing rumination and/or thought suppression to attempt to reduce the gap between where one is and where one would like to be. The challenge with this, Williams proposes, is that the very act of ruminating upon or suppressing unwanted thoughts counteractively intensifies the depressed mode of mind and subsequently subjective dysphoria. He argues that rumination and avoidance tend to change in tandem following mindfulness-based interventions, suggesting that mindfulness cultivates a present-moment awareness of these habitual tendencies, which leads to reductions of maladaptive discrepancy-based modes of processing.

Orientation toward experience.

In addition to increasing self-regulation of attention, Bishop and colleagues (2004) suggest that mindfulness fosters one's ability to attend to present-moment experiences with a nonjudgmental attitude of curiosity, openness and acceptance. Mindfulness training seeks to stimulate curiosity about where the mind drifts when it does, as if one is an "objective scientist seeking accurate knowledge of some phenomenon" (Brown, Ryan & Creswell, 2007, p. 214). Individuals cultivating this stance are not clinging to the valence or degree of pleasantness or unpleasantness associated with present-moment thoughts and emotions. Allowing internal events to unfold in this way, rather than actively manipulating them, may lead to greater understanding of the very nature of present-moment experience, aversive internal events included. This process may be best explicated in a common instruction for mindfulness of the breath: meditators are asked to engage in watching their breath without trying to actively change the quality of the breath experienced in the present-moment. For example, if breathing is labored, meditators are asked not to try to change or manipulate this breath, but rather just to notice and become curious about the here and now experience of the labored breathing. In this way, the present-moment experience of breathing becomes the object of attention, without trying to influence the breath in any way.

In the presence of intense, unpleasant emotions, an individual practicing mindfulness may experience an increased ability to perceive and allow emotions, as the investigative nature of this stance allows for increased sensitivity to the nuances of these

emotions. Following traditional interventions found in cognitive behavioral models, increased facility in identifying emotions may improve the individual's capacity to connect how specific cognitions, valuations or judgments give rise to particular emotional experiences, perhaps improving the adaptive meaning-making the individual ascribes to those emotions. Furthermore, investigating emotions in this objective, dispassionate manner, without clinging to nor pushing away negative thoughts and feelings, may increase tolerance to intense affect and decrease the emotional dysregulation that often compounds the experience of intense affect (Linehan, 1993). As such, intense affects may be seen as less threatening. Further, positioning one's self in a distanced manner from internal experiences, whether they be unwanted thoughts, negative affect or physical pain, may lead to the discovery of the transient nature of these phenomena, realizing that there are gradations of these experiences that shift from moment to moment (e.g., intense rage vs. frustration). Lastly, shifting one's relationship in this manner may create distance between self and the problematic internal stimuli, leading to an understanding that "I am not my thoughts; I am not my emotions." This decentered stance may preempt aggravation of what emerges initially as a transitory, time-limited affective experience, as is often the case for suicidal thoughts and crises (Drum et al., 2009), from developing into an enduring mood pattern or cognitive distortion.

Empirical support of orientation toward experience.

Evidence is emerging that is suggestive of mindfulness-based interventions generating just such a decentered, non-judgmental perspective. In one study attempting to

tease apart the harmful effects of ruminative attention often directed toward distressful situations found that the Reflection subscale of the Ruminative Response Scale (RRS) demonstrated lower correlations with depression and anxiety than the Brooding subscale of this measure (Rude, Maestas, & Neff, 2007). Further, in adapting the RRS to reduce the judgmental and self-critical properties of rumination measured in the scale, Rude and colleagues found the redesigned measure was no longer predictive of depression and thought suppression, and was positively associated with emotional processing. These findings suggest that "bare attention" directed toward aversive thoughts and emotions may in fact offer an adaptive approach to emotional functioning when reflecting on a recent situation in which participants experienced an important personal loss (Rude, Maestas, & Neff, 2007).

Mindfulness may also foster an accepting posture toward one's affective experience. Casting the processes of mindfulness from an emotion regulation perspective, Adele & Feldman (2004) posit that the difficulty some experience with regulating emotions likely emerges from an imbalance between chronic over- or under-engagement with emotions. The authors suggest that repression, denial, distraction, substance abuse, dissociation and suicidal gestures/attempts serve as examples of a chronic avoidance of emotions that can become problematic and disrupt adaptive functioning. On the other hand, rumination, excessive worry, obsessions, compulsive behavior and urges/cravings can all be considered processes by which one becomes excessively engaged in one's emotions to the degree that it becomes unproductive. As such, the authors highlight that "addictions can be conceptualized as a way to both maintain the highs and avoid the lows

of life" (Adele & Feldman, 2004, p. 255). Mindfulness may offer a process by which one can engage in an adaptive manner with one's emotions developing a certain measure of equanimity: acknowledging emotions while concurrently abstaining from affording them the excessive power that could result in a disruption in one's ability to function.

Supporting this emotion regulation framework, two studies found that self-reported mindfulness levels were positively associated with greater levels of emotional intelligence, clarity of emotional states and greater ability to repair unpleasant mood states (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003), suggesting that individuals higher in dispositional levels of mindfulness possess stronger affect regulation capacities. In exploring the correlations of the Mindful Attention Awareness Scale (MAAS) to other measures of psychological well-being, Brown & Ryan (2003) discovered the MAAS to be positively associated with both the NEO Five-Factor Inventory (NEO-FFI) subscale of Openness to Experience and the subscales of the NEO Personality Inventory (NEO-PI) that are reflective of attentiveness and receptivity to experience. Further, the MAAS was inversely related to the Rumination subscale of the Rumination-Reflection Questionnaire (RRQ), suggesting that mindful states of awareness run counter to a tendency ruminate upon events or experiences.

In establishing convergent and discriminant validity for the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R), this measure was found to correlate with lower distress and higher well-being scores, and lower levels of maladaptive emotion coping processes, such as experiential avoidance, thought suppression, rumination, worry and overgeneralization (Feldman, Hayes, Kumar, Greeson, &

Laurenceau, 2007). Further, mindfulness was also correlated with cognitive flexibility, clarity of and attention to feelings, and mood repair. While also correlated with distraction, mindfulness exhibited a stronger association with clarity of feelings, and the authors posit that while mindfulness may offer an alternative to rumination, engaging in mindfulness may develop the ability to tolerate or "sit with" aversive thoughts and emotions with some measure of acceptance, rather than attempting to push away or avoid those internal stimuli.

Arch and Craske (2006) found that participants in a 15-minute "focused breathing" condition exhibited more consistent and moderately positive ratings to slides containing neutral images compared to participants who were in an "unfocused attention" or "worrying" mood-induction condition. Further, those utilizing focused breathing exhibited an increased willingness to continue gazing at negatively-valenced slides than those in the "unfocused attention" condition. This suggests that in response to negative or neutral images, focused breathing, which was utilized as a proxy of a mindfulness induction since participants had not received formal mindfulness meditation training, may be a more adaptive emotion regulation response than modes of responding that are unfocused or ruminative. In sum, these studies suggest that mindfulness offers a manner of processing emotions that allows sustained attention on the present-moment experience of emotions without over-engaging with or negatively judging emotions.

From a cognitive perspective, mindfulness may also modify the appraisal and information processing elements that are set in motion when aversive thoughts or emotions emerge. A series of studies examined the impact of an appraisal procedure in

which participants were primed to see the bigger picture (e.g., overall bad events are rare and good things happen all the time), and thus shift and broaden their perspective, while watching distressing films (Schartau, Dalgleish, & Dunn, 2009). Compared to the control group, the appraisal participants exhibited decreased self-reported and psychophysiological (i.e., galvanic skin response and heart rate) markers of distress both during and immediately following watching the film. Further, in a sample of individuals endorsing distressing personal memories, this perspective broadening procedure was found to diminish the distressful effects during recall of these troubling autobiographical memories. One week post-treatment, those in the appraisal condition experienced reduced intrusion and avoidance of autobiographical memories compared to baseline levels and those of the control group (Schartau et al., 2009). These studies provide evidence that shifting the process by which one processes information—by way of widening the scope of incoming information rather than biasing one's focus toward strictly negative interpretations of experience—may cause a shift in perspective, thereby decreasing emotional reactivity.

In a writing manipulation designed to determine if contextualizing a recent challenging experience influenced emotional processing, students who were asked to write about a recent interpersonal rejection from a contextual perspective (e.g., "How do you think you will view this event in 1-2 years?") self-reported lower levels of rumination and depressive symptoms at posttest compared to a group asked to consider reasons for the rejection (e.g., "Why do you think this happened?") and a no-writing control group (Rude, Mazzetti, Pal, & Stauble, 2011). The authors suggest that these

findings indicate that the nature of thinking about a recent injurious event can either resolve or exacerbate the subjective distress in relation to that event, and that in particular considering a recent social rejection in a contextualized manner may lessen the impact of an adverse event. On the contrary, considering a recent rejection in light of the reasons for said rejection may serve to exacerbate or maintain the deleterious effects of the emotional experience of the event. While not directly tied to the construct of mindfulness, this study does suggest that adopting a broader orientation toward one's experience may confer protection from developing ruminative or depressive symptoms in light of processing negative emotional experiences.

Similar to broadening one's perspective, mindfulness training may increase a nonjudgmental stance toward internal experience by fostering an awareness of self that is more global and decentered. Teasdale and colleagues (2002) found that following a round of cognitive therapy (CT) and mindfulness-based cognitive therapy (MBCT), participants exhibited increases on an instrument designed to measure metacognitive awareness after exposure to vignettes designed to elicit feelings of dysphoria. This measure of metacognitive awareness, the Measure of Awareness and Coping in Autobiographical Memory (MACAM), was designed specifically for this study, and demonstrated that participants accessing cognitive sets from memory were more likely to experience those cognitions as passing mental events that were subjective, transient and contextual, rather than being connected in some way to self (Teasdale et al., 2002). Participants in the treatment groups, both CT and MBCT, also exhibited significant reductions in depression relapse as compared to a TAU group, and for those participating in the CT group, results

indicated that this reduction occurred through the effect of CT increasing accessibility to metacognitive sets. The design of the study of the MBCT trial did not allow full exploration of the mediation effect of change in metacognitive awareness influencing the path between treatment effect and prevention of relapse (Teasdale et al., 2000). However, the study investigating effects of MBCT did demonstrate that, after controlling for differences in age, pretreatment depression levels and relapse, participants in the MBCT group displayed greater access to metacognitive sets post-treatment in response to cues related to their depression than those in the TAU group.

Taken as a whole, the results from these studies suggest that reductions in depression relapse may emerge due to the shift in relationship one has toward these negative cognitions—adopting a broader, more accepting and decentered perspective—rather than resulting from changes in specific thought content. Teasdale and colleagues (2002) posit that this shift in perspective, being able to stand back and relate differently to depressive symptoms or situational stressors, may in turn develop the use of more functional cognitive sets, increasing the ability to evaluate the accuracy of negative, habitual thought patterns. These findings map onto Teasdale, Segal and Williams' (1995) earlier theory that when a mild dysphoric mood develops, different information processing patterns activate, and in the case of major depressive disorder, self-perpetuate an ongoing stream of depressogenic schematic models. This feedback loop may then lead to the maintenance of depression. The authors posit that mindfulness training and cognitive therapy seeks to modify the type of processing that occurs in these instances, "redeploying" attention to alternative schematic models that do not attempt to dislodge

the depressive schema, but that seek to incorporate the depressive schema into a broader awareness and to understand these depressogenic schematic models as representations of "mental events" rather than being reality itself (Teasdale, Segal & Williams, 1995, p. 38)

To summarize, the definition proposed by Bishop and colleagues (2004) divides mindfulness into two components, *self-regulation of attention* and *orientation toward experience.* An impressive body of literature is beginning to emerge supporting the association of mindfulness with these proposed elements of the construct. This suggests that mindfulness shows promise as an interventional tool for nurturing present-moment awareness and creating a decentered perspective with relation to one's internal experiences, which has potential for diminishing the impact of negative automatic thoughts and emotions in the development of psychopathology.

Mindfulness outcome literature.

As indicated by the research reviewed thus far, a substantial portion of the mindfulness literature has chosen as its focus the effects of mindfulness training as a psychosocial intervention as it applies to specific psychiatric populations or more broadly among healthy populations under stress. This outcome literature will be reviewed briefly as it relates to the overall efficacy of mindfulness interventions and specifically in reducing problematic mental health outcomes such as depression or suicidality.

Two meta-analyses of the empirical literature on the effects of mindfulness training show an overall effect size of approximately .50 covering a variety of problematic conditions, including chronic pain, cancer, heart disease, depressive relapse,

anxiety, disordered eating and nonclinical populations coping with stress (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2003). In another review of mindfulness interventions, Hoffman and colleagues (2010) found a medium pre- to post- effect size estimate based on 39 studies for reducing anxiety (Hedges' g = .63) and for reducing depression (Hedges' g = .59), suggesting moderate effectiveness of these interventions. Two studies found Mindfulness-Based Cognitive Therapy (MBCT) was successful in reducing depression relapse by half for people suffering from 3 or more prior episodes of depression when compared to TAU (Ma & Teasdale, 2004; Teasdale et al., 2000). This effect size is comparable to the effect on depression relapse found in depression vulnerable populations exposed to standard cognitive therapy (CT).

Mindfulness outcome literature and suicidality.

While mounting evidence suggests that mindfulness is efficacious in the application of interventions for a broad range of populations, mindfulness has also been used in treatments tailored for sub-groups of individuals vulnerable to suicidal thoughts and behaviors (Linehan, 1993; Segal et al., 2002). For example, in the application of Dialectical Behavior Therapy (DBT) to the treatment of women veterans who met criteria for borderline personality disorder diagnosis, participants of the DBT group showed significantly greater reductions in suicidal ideation, hopelessness and number of parasuicidal acts (Koons et al., 2001).

One study found that depressed participants engaging in Mindfulness-Based Cognitive Therapy (MBCT) were able to show increased meta-awareness and specificity

of memory while describing the warning signs from a recent suicidal crisis as compared to a delayed treatment group (Hargus, Crane, Barnhofer, & Williams, 2010). The authors classified this description of a recent suicidal crisis as the participants' "relapse signature." They posit that these findings indicate that mindfulness training influences the information processing that depressed individuals engage in, allowing them to reflect on previous crises in a decentered way and adaptively respond when the relapse signature emerges. This decentered perspective may allow the person to re-construe the meaning of suicidal thoughts that emerge during the relapse signature, reflecting on memories from a suicidal crisis with some level of detail, which may result in the prevention of future relapses. This study expands upon the findings reported by Teasdale and colleagues (2002), which found lower levels of meta-awareness predicted subsequent depression relapse.

Williams et al. (2006) highlight the focus in the suicidality literature on the identification of risk factors common to individuals exhibiting suicidal thoughts and behaviors. They argue, however, that deficits common to suicidal individuals (e.g., problem solving deficits) often resolve once the suicidal crisis is past, making these deficits no longer accessible outside the suicidal episode. Thus, these cognitive or emotional vulnerabilities lie latent, making them difficult to target with an intervention. This episodic nature of suicidal crises is consistent with findings from a large-scale, national study that reported suicidal crises to be brief and recurrent among a population of college students (Drum, Brownson, Burton Denmark, & Smith, 2009). Williams and colleagues (2006) ascribe a similar process of "cognitive reactivity"—a process that has

been used to explain challenges intervening with recurrent depression—to the latent nature of cognitive and emotional vulnerabilities in chronically suicidal individuals. They suggest that as with depression, a suicidal "mode" is activated by minor downturns in mood of the suicidal individual, much as has been described by Rudd, Joiner and Rajab (2001), leading to a "whole mode of mind" that is dominated by suicidal thoughts (Williams et al., 2006, p. 204). The authors suggest that mindfulness training may serve as an alternate mode of processing for individuals vulnerable to developing suicidal thoughts and behaviors, removing them from an automatic form of processing in which alternatives other than suicide cannot be accessed. Indirect evidence points to existence of this cognitive reactivity in a study that showed that following a negative mood induction, individuals in the previously suicidal group exhibited a decline in problem-solving capacity from baseline as compared to controls and depressed patients in remission (Williams, Barnhofer, Crane, & Beck, 2005). Mindfulness-based therapies may serve to interrupt the automatic, habitual modes of mind that are activated when an individual begins having suicidal thoughts, thereby reducing the likelihood of the emergence of a suicidal crisis.

As such, a randomized controlled trial is currently underway to test whether an 8-week trial of mindfulness-based cognitive therapy (MBCT) reduces incidence of suicidal ideation and attempts in those depression vulnerable individuals with a history of suicidality (Williams et al., 2010). In particular, this trial will serve to decouple the mindfulness meditation component of MBCT by offering as a comparison group a Cognitive Psycho-Education (CPE) treatment, which includes all the elements of MBCT

absent the mindfulness meditation component. In sum, this body of outcome literature suggests that mindfulness may convey protection from the development of suicidal thoughts and behaviors for vulnerable sub-groups by shifting and broadening the processing capacities of the suicidal individual, allowing them to switch into a mode of processing that permits entry of information beyond that which the suicidal mode supplies. This increased processing capacity may in turn increase problem solving capacity, toleration of negative affect and suicidal thoughts, thereby reducing cognitive reactivity.

Mindfulness in relationship to extant theories of suicidality.

As indicated by the research reviewed thus far, mindfulness emerges as a promising construct in the application of mindfulness-based interventions in the reduction of suicidal thoughts and behaviors. However, development of these flourishing therapeutic technologies has largely progressed without inquiry into the functional processes of change or development of possible working models to test the applicability of mindfulness to a variety of populations and problem areas. The same is true for the application of mindfulness to the reduction of suicidality in its various forms and as it manifests in a variety of suicidal sub-populations (e.g., chronically suicidal versus single episode). Given the data that suggests suicidality exists along a continuum of acuity (Drum et al., 2009), it is quite possible that mindfulness would function differently at varying points along this continuum. As a point of departure for this inquiry, mindfulness will be considered within the context of influential theories of suicidality to provide

further insight into the potential role of mindfulness in buffering against development and promotion of suicidal thoughts and behaviors.

In light of Joiner's (2005) interpersonal theory of suicidal behavior, an individual able to tap the broadened perspective that appears influenced by a mindful orientation would be unlikely to give weight to the misperceptions of failed belongingness that Joiner posits are essential to desire dying by suicide. This is not to say that a mindful individual under enough distress might not experience cognitions related to failed belongingness, rather that a mindful individual might possess greater ability to tolerate said thoughts without elaborating upon or attempting to suppress them. Further, mindful individuals may have the capacity for improved reality testing, being capable of honestly appraising situations by cultivating a decentered awareness of events as they occur (Hargus et al., 2010; Teasdale et al., 2002) remembering that "a thought is just a thought." As such, the misperception that one is a burden to others that occurs in Joiner's conceptualization of the suicidal individual is unlikely to hold much influence over the behaviors of the mindful individual. Further, rather than becoming immune and habituated to pain—the mechanism that Joiner (2005) posits allows the suicidal individual to become inured to the suicidal act—individuals high in mindfulness tend to approach their emotions with a certain measure of acceptance, allowing themselves to experience their emotions without becoming over-identified with this internal experience (Arch & Craske, 2006; Broderick, 2005; Feldman et al., 2007). This connects with the underlying assumptions of mindfulness-based cognitive therapy (MBCT), which states that lack of awareness maintains habitual modes of thought, and along with judgment of

experience, results in “ruminative attempts to problem-solve” (Williams & Swales, 2004, p. 322). In these authors’ estimation, the error for a suicidal individual is the attempts made to eliminate, reduce or change the unbearable pain that is characteristic of the suicidal mode of mind. A mindful awareness, however, seeks not to modify the contents of one’s thoughts, but rather one’s relationship to those thoughts, allowing those thoughts to come and go as they may.

Similarly, it appears improbable that the mindful individual will enter into Rudd’s (2000) suicidal mode or exhibit vulnerability to the cognitively-based diathesis central to the diathesis-stress theories of suicidality (Rudd, 2009). Meta-cognitive awareness, a defining feature of mindfulness (Teasdale et al., 2002), may shield a person from being overrun by ruminative, automatic thoughts, such as “I am unworthy,” that occur for someone with an activated suicidal mode. An individual practicing such meta-awareness, fostering a decentered perspective from the role of thoughts, may be less likely to experience or promote the development of automatic thoughts characteristic of the suicide belief system, including helplessness, hopelessness and feeling unworthy (Rudd, 2000). Further, as negative emotions arise at the onset of life stressors, mindful individuals are able to hold those emotions in balanced awareness, managing not to identify too deeply with their reactions and thereby limiting the additional flooding of secondary negative affect (Broderick, 2005; Schartau et al., 2009). Thus, these individuals are able to withstand adverse emotions. Inability to tolerate negative affect and experiential avoidance are hypothesized to be central to the development of suicidal thoughts and behaviors (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), conditions

that may be particularly amenable to cultivation of mindful awareness. For example, dialectical behavior therapy (DBT), which includes mindfulness modules within a broader treatment protocol, has been shown to increase affect tolerance among individuals diagnosed with borderline personality disorder (Koons et al., 2001), while mindfulness-based cognitive therapy (MBCT) has been shown to reduce avoidance of activity for those suffering from chronic pain (Kabat-Zinn et al., 1985), and avoidance characteristic of panic disorder (Miller, Fletcher, & Kabat-Zinn, 1995). An individual experiencing distress cannot escape the internal milieu of thoughts and emotions that develops as a result, and as Hayes et al. (1996) suggest, suicide may serve as the ultimate experiential avoidance. Thus, triggers hypothesized to activate the suicidal mode, such as the occurrence of a negative life event or the flooding of an intensely negative mood, are more likely to be well tolerated by an individual high in mindfulness, as mindful individuals can hold these life events or negative emotions in balanced awareness. This willingness to approach but not over-identify with internal experience may then lead to a reduction in ruminative thinking and an increased ability to tolerate this negative affect, thereby reducing suicidal risk. As such, the mindful individual may have greater facility for switching into Williams' (2008) "whole mode of mind" (p.725), reducing maladaptive discrepancy-based modes of processing.

The aforementioned theories offer unique perspectives as to the process by which mindfulness might function to attenuate the suicidal urge in the face of hardship or distress. Given the nature of the mindful manner of coping when confronted with adversity and the mindfulness outcome literature's support of positive mental health

outcomes following a course of mindfulness skills training, including for depression vulnerable individuals (Teasdale et al., 2002) and for individuals diagnosed with borderline personality disorder (Koons et al., 2001), it is predicted that college students higher in trait levels of mindfulness will be less likely to develop suicidal thoughts and less likely to progress along the suicidal continuum to increasingly severe suicidal cognitions and behaviors.

Purpose of the Current Study

Researchers have called for increased examination of protective factors and their relationship to various markers of suicidality (Cha & Nock, 2009; Gould et al., 2003; Rutter, Freedenthal, & Osman, 2008). The primary purpose of the present study is to examine the relationship between mindfulness and the continuum of suicidal thoughts and behaviors, ranging from low-grade morbid thoughts up to and including suicide attempts. Mindfulness emerges in the literature as a promising protective factor that may have applicability in shielding individuals from entering into and progressing along the continuum of suicidality. Prior research has linked mindfulness training to various indicators of mental health, including reduction of depressive symptoms (Chambers, Lo, & Allen, 2008; Hofmann et al., 2010), anxiety symptoms (Hoffman et al., 2010), depressive relapse (Ma & Teasdale, 2004; Teasdale et al., 2000), reduced efforts to suppress unwanted thoughts (Bowen et al., 2007; Feldman et al., 2007; Hepburn, Crane, Barnhofer, et al., 2009), rumination (Feldman et al., 2007; Kumar et al., 2008), increased ability to let go of negative automatic thoughts (Frewen et al., 2008), greater clarity of

emotional states and greater ability to repair unpleasant mood states (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003), greater cognitive flexibility (Feldman et al., 2007), and increased metacognitive awareness (Teasdale et al., 2002). While mindfulness-based training has been shown to be efficacious in reducing suicidal ideation and behaviors in specific sub-populations, for example individuals diagnosed with borderline personality disorder (Koons et al., 2001), no research to date has explored the influence of individual levels of mindfulness as a protective factor for entry into and progression along the continuum of suicidality among a population of college students. As Baer at al. (2004, p. 193) highlight: "mindfulness is an inherent human capacity and that 'we are all mindful to one degree or another, moment by moment' (Kabat-Zinn, 2004, pp. 145)."

This study aims to build upon existing research by examining the relationship between the spectrum of suicidal thoughts and behaviors and dispositional levels of mindfulness. The present study analyzed archival data collected in the spring of 2011 from a national sample of college students at over 70 colleges and universities. Self-report methods included a measure of dispositional levels of mindfulness, subjective distress, and various items inquiring into suicidal thoughts and behaviors during a recent stressful time period. These measures were utilized to explore answers to the following questions.

Research Questions

Because this study is exploratory in nature and is examining relationships heretofore unexamined in a college population, no a priori hypotheses are put forth.

Instead, the following questions have emerged from a review of the extant literature on the application of mindfulness in suicidal populations. These questions are designed to expand upon current knowledge regarding the potential protective effect that the construct of mindfulness may confer upon entry into and progression along the suicidal continuum.

Research question 1.

Question: After controlling for significant demographic and historical variables, is self-reported distress level during a recent stressful period significantly associated with the following: 1) absence of suicidal cognitions and behaviors (*Nonideators* group), 2) presence of suicidal cognitions (*Ideators* group) and 3) presence of suicidal cognitions and behaviors (*Actors* group)?

Rationale: Robust evidence exists for the role of negative life stress or negative life events precipitating suicidal thoughts and behaviors (Bonner & Rich, 1987; Konick & Gutierrez, 2005; Schotte & Clum, 1982). In particular, compared to their non-suicidal counterparts higher levels of life stress in the months preceding the study time period were reported by college student ideators (Schotte & Clum, 1982) and 18- to 65-year-old attempters (Paykel, Prusoff, & Myers, 1975). Interpersonally-based negative events or traumas may be particularly connected with development of suicidality (Joiner & Rudd, 1995; Steiner et al., 2010; Van Orden et al., 2010), and life stressors may influence the development of suicidality in college students through the pathways of hopelessness and/or depression (Bonner & Rich, 1987; Konick & Gutierrez, 2005; Rudd, 1990).

Given the inconsistent reliability of life events checklists (Monroe, 2008), subjective appraisals of life stressors may prove fruitful in predicting the development of suicidality. In particular, Bonner and Rich (1988) found that perceived cumulative life stress experienced over the course of the past year was predictive of developing hopelessness after controlling for depressed mood. Therefore, it is possible that higher self-reported appraisals of distress levels may provide predictive utility in the development of suicidal thoughts and behaviors.

Research question 2.

Question*:* After controlling for significant background variables, is mindfulness significantly associated with the following: 1) absence of suicidal cognitions and behaviors (*Nonideators* group), 2) presence of suicidal cognitions (*Ideators* group), and 3) presence of suicidal cognitions and behaviors (*Actors* group)? How does the strength of this association vary across these groups?

Rationale: Mindfulness-based therapies have shown promise in the outcome literature for improving outcomes related to suicidal thoughts and behaviors. Specifically, studies have shown mindfulness-based therapy to improve meta-awareness while describing a recent suicidal crisis for a depression-vulnerable population (Hargus et al., 2010) and to reduce suicidal ideation, hopelessness and number of parasuicidal acts in a population meeting the criteria for borderline personality disorder (Koons et al., 2001). Further, mindfulness has shown to be associated with reductions in maladaptive methods of coping that may contribute to suicidality, including suppressing unwanted thoughts

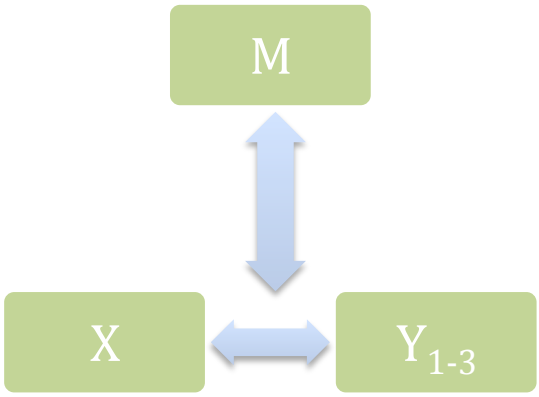
(Bowen et al., 2007; Feldman et al., 2007; Hepburn et al., 2009), rumination (Feldman et al., 2007; Kumar et al., 2008), and decreased ability to let go of negative automatic thoughts (Frewen et al., 2008).

Further, various elements that are highlighted within theories of the development of suicidality, including Joiner's (2005) interpersonal theory of suicide and Rudd's (2000) suicidal mode, appear to parallel the construct of mindfulness. Specifically, Joiner's (2005) concepts of thwarted belongingness and burdensomeness are likely to be better tolerated by the mindful individual. It is quite possible that the misperceptions put forth by the interpersonal theory of suicide are just as prevalent among mindful individuals, but what may differentiate the mindful individual from one who acts on these misperceptions is an ability to broaden perspective and decenter from these maladaptive thought patterns. Additionally, rather than becoming immune and habituated to pain, as Joiner (2005) posits is central to developing a capacity to die by suicide, the mindful individual may be more likely to accept and allow present-moment emotions, experiencing these emotions without becoming over-identified with this internal experience (Arch & Craske, 2006; Broderick, 2005; Feldman et al., 2007). Lastly, the mindful individual is also unlikely to become caught up in the destructive combination of cognitive, behavioral and affective outcomes that is characteristic of Rudd's (2000) suicidal mode and the cognitively-based diathesis that frames the diathesis-stress theories of suicidality (Rudd, 2009).

Research question 3.

Question*:* Does the interaction between mindfulness and distress provide a buffering effect in the development of the following as self-reported distress increases: 1) absence of suicidal cognitions and behaviors, 2) presence of suicidal cognitions, and 3) presence of suicidal cognitions and behaviors (see Figure 2)?

Figure 2: Interaction of Distress and Mindfulness on categorical variable Suicide



NOTE: X = Distress; Y = Suicide (1 = *Nonideators* group; 2 = *Ideators* group; 3 = *Actors* group); M = Mindfulness

Rationale: Consistent with Kabat-Zinn's (1990) conceptualization of mindfulness offering an adaptive method of coping with life stressors, substantial evidence points toward mindfulness as a method for accepting and holding with balanced awareness negative thoughts and emotions (Arch & Craske, 2006; Baer et al., 2004; Brown & Ryan, 2003; Chambers et al., 2008; Feldman et al., 2007; Frewen et al., 2008; Hepburn et al., 2009; Kumar et al., 2008; Teasdale et al., 2002). Further, negative life events and subjective stress levels have been well established as covariates of suicidal thoughts and

behaviors (Bonner & Rich, 1987; Joiner & Rudd, 1995; Konick & Gutierrez, 2005; Paykel, Prusoff, & Myers, 1975; Rudd, 1990; Schotte & Clum, 1982; Steiner et al., 2010). Given these findings, it is anticipated that mindfulness will serve as a buffer for the effects of distress on movement along the continuum of suicidality. Specifically, it is predicted that individuals high in mindfulness will be less likely to exhibit more severe forms of suicidality as distress increases, while those low on mindfulness will not receive this protective benefit of mindfulness and will exhibit progression along the continuum of suicidal thoughts and behaviors as levels of distress increase.

Research question 4.

Question*:* After matching for major background variables, is mindfulness significantly associated with the continuous variable examining strength of intent during a recent suicidal crisis? Does mindfulness moderate the relationship between self-reported distress levels and strength of intent?

Rationale: Since only a small percentage of those endorsing suicidal ideation report strong intent to die (King, 1997; Maris, 1992; McAuliffe, 2002), and most attempt survivors report either strong intent or ambivalence about dying by suicide (Kessler, Borges, & Walters, 1999; Nock & Kessler, 2006), it appears that intent to die corresponds with the increasing severity observed along the continuum of suicidality. No existing research or theory suggests that mindfulness would contribute to differences in intent to die by suicide. However, following Joiner's (2005) interpersonal theory of suicide, the mindful individual is unlikely to become increasingly habituated to the act of suicide,

possibly decreasing self-reported intent to die by one's own hand. Thus, it is expected that those endorsing greater intent to die during a recent suicidal crisis will endorse lower levels of mindfulness, and that this relationship will exert its influence through the interaction of mindfulness and self-reported distress levels.

Chapter Three: Methods

The current study is an analysis of archival data of a 79-item cross-sectional survey examining college student coping during times of distress titled *Undergraduate and Graduate Student Coping with Stressful Experiences.* This web-based survey was administered during the spring of 2011 through the collaboration of the National Research Consortium of Counseling Centers in Higher Education. This organization was founded in 1991 to conduct original research on college student mental health and is headquartered at the Counseling and Mental Health Center of The University of Texas at Austin. Participation in projects led by the Research Consortium is open to any U.S. or Canadian institution of higher education, and membership in the Research Consortium varies from project to project.

Participants

Entire sample of survey respondents.

A stratified random sample of 101,491 students across 74 U.S. colleges and universities was selected to receive an invitation to participate in the web-based survey. For the 51 campuses with 5,000 or more undergraduates, 1,000 students were randomly sampled, and for the 23 campuses with 500 to 4,999 undergraduates, 500 students were randomly sampled. The same stratified sampling procedure was used to select graduates, and all students sampled were over the age of 18 (over 19 in Nebraska). The combined undergraduate and graduate response rate was 26.3% (26,742/101,491), producing an overall sample size of 26,742 students who responded to the entire survey.

Participating institutions were representative of U.S. colleges and universities and institutional demographics were comparable to other large-scale, national studies examining college student health (ACHA-NCHA, 2011). The size of the participating institutions ranged from 770 to 70,440 with an inter-quartile range of 4,260 to 27,750 and a mean size of 17,952. Approximately sixty-five percent of the participating colleges and universities were public institutions. The sample consisted of colleges and universities from geographically diverse regions of the country, with 23% of the schools located in the Northeast, 19% in the West, 27% in the Midwest and 31% in the South. The majority of institutions enrolled both graduate and undergraduate students with only six schools enrolling only undergraduates. One institution was a community college, but was excluded from the aggregated national data.

Among the 14,113 undergraduates who responded to the survey, 64.2% were female and 0.2% identified as transgender. Racial/ethnic composition of the undergraduate sample was as follows: 71.4% Caucasian/White/of European descent/European; 8.1% Asian/Asian American; 6.5% Hispanic/Latino/Latina; 6.3 % Multiethnic; 4.1% African American/of African descent/African/of Caribbean descent/Black; 1.5% Middle Eastern/East Indian; 1.4% Other; 0.3% Native American/Alaskan Native; 0.2% Native Hawaiian/other Pacific Islander. Approximately 92% of the sample described their sexual orientation as heterosexual, 3.4% as bisexual, 2.3% as gay or lesbian, 1.3% as questioning and 1.4% as other. The mean age of the undergraduate sample was approximately 22 years old, and the sample was spread fairly

evenly across class years with 20.6% freshmen, 23.8% sophomores, 28.2% juniors and 27.4% seniors.

Among the 12,131 graduates who responded to the survey, 61% were female and 0.1% identified as transgender. Racial/ethnic composition of the graduate sample was as follows: 67.9% Caucasian/White/of European descent/European; 12.6% Asian/Asian American; 4.9% Hispanic/Latino/Latina; 4.5% African American/of African descent/African/of Caribbean descent/Black; 4.4 % Multiethnic; 3% Middle Eastern/East Indian; 2% Other; 0.3% Native American/Alaskan Native; 0.2% Native Hawaiian/other Pacific Islander. Ninety-two percent of the sample described their sexual orientation as heterosexual, 3.3% as bisexual, 2.7% as gay or lesbian, 1.4% as other and 0.6% as questioning. The mean age of the graduate sample was approximately 30 years old, with 93.7% graduate students, 3.7% medical students and 2.8% law students.

Nonideator Sample: Absence of Suicidal Thoughts and Behaviors.

The present study examined three sub-groups of the participants from the entire sample described above. These samples were used to answer research questions 1 through 3 enumerated above. The *Nonideator* sample comprised the 23,034 students who reported having no suicidal thoughts and having engaged in no suicidal or preparatory behaviors during the stressful period. Of this sample, 62.8% were female and 0.1% identified as transgender. Racial/ethnic composition of the *Nonideator* sample was as follows: 70.5% Caucasian/White/of European descent/European; 9.7% Asian/Asian American; 5.7% Hispanic/Latino/Latina; 5.2 % Multiethnic; 4.3% African American/of

African descent/African/of Caribbean descent/Black; 2.1% Middle Eastern/East Indian; 1.6% Other; 0.3% Native American/Alaskan Native; 0.2% Native Hawaiian/other Pacific Islander. Approximately ninety-three percent of this sample described their sexual orientation as heterosexual, 2.9% as bisexual, 2.3% as gay or lesbian, 1.3% as other, and 0.8% as questioning. The mean age of this sample was 27 years old, with 52.9% of the sample comprised of undergraduate students and 47.1% of graduate students.

Ideator Sample: Morbid Thoughts and Suicidal Ideation.

The *Ideator* sample consisted of the 2,447 participants endorsing some form of suicidal thoughts during the recent stressor, but stopping short of engaging in suicidal or preparatory behaviors during this time. Of this sample, 63.6% were female and 0.4% identified as transgender. Racial/ethnic composition of the *Ideator* sample was as follows: 65.1% Caucasian/White/of European descent/European; 12.6% Asian/Asian American; 7% Multiethnic; 5.7% Hispanic/Latino/Latina; 4.2% African American/of African descent/African/of Caribbean descent/Black; 3% Middle Eastern/East Indian; 1.8% Other; 0.2% Native American/Alaskan Native; 0.1% Native Hawaiian/other Pacific Islander. Approximately eighty-five percent of this sample described their sexual orientation as heterosexual, 6.5% as bisexual, 3.9% as gay or lesbian, 2.3% as questioning, and 2% as other. The mean age of this sample was 25 years old, with 59.4% of the sample comprised of undergraduate students and 40.6% of graduate students.

Actor Sample: Preparations and Suicide Attempt(s).

The third sub-group of responses that was analyzed for the current study was the group of 413 participants who endorsed engaging in some form of suicidal or preparatory behavior in addition to suicidal thinking during the recent stressful period. Of this sample, 66.6% were female and 1.2% identified as transgender. Racial/ethnic composition of the *Actor* sample was as follows: 61.3% Caucasian/White/of European descent/European; 14% Asian/Asian American; 8.5 % Multiethnic; 6.3% Hispanic/Latino/Latina; 4.8% African American/of African descent/African/of Caribbean descent/Black; 1.7% Middle Eastern/East Indian; 2.4% Other; 0.7% Native American/Alaskan Native; 0.0% Native Hawaiian/other Pacific Islander. Approximately seventy-five percent of this sample described their sexual orientation as heterosexual, 12% as bisexual, 6.3% as gay or lesbian, 3.9% as questioning, and 2.4% as other. The mean age of this sample was 24 years old, with 72.9% of the sample comprised of undergraduate students and 27.1% of graduate students.

The sample sizes for the *Nonideator, Ideator* and the *Actor* samples exceed recommendations made by Tabachnick and Fidell (2001), who suggest that the sample size exceed 104 + m, where m = number of independent variables, or that there should be at least 20 times as many cases as independent variables. Given that eight predictor variables is the highest number of independent variables examined in any single model in this study, an expected sample size of 413 for the *Actor* sample exceeds these recommendations. Because to date no studies have examined this unique combination of

variables, a power analysis could have been conducted for the regression; however, the odds ratios required to conduct this analysis would at best be estimates.

Procedures

Data collection of national sample.

Prior to data collection, a research proposal and draft of the survey measure, including the email recruitment message, informed consent, the login and logout pages, and procedures for referring participants to local mental health resources, were submitted to the Institutional Review Board (IRB) of The University of Texas at Austin and each participating college and university (see Appendix A). Randomly selected students were sent an email invitation from their local university counseling center with an embedded link to the survey. This email invitation specified that The University of Texas at Austin was conducting the study and that it was sponsored and supported by the local campus. Recipients were provided the incentive of an opportunity to be entered into a drawing to receive one of 100 gift cards in the amount of $50 to Amazon.com. The email invitation included a link to the online survey web page and was customized according to each institution's colors and logo.

After consenting to participate in the study, students were asked a variety of questions regarding their demographics, presence of coping assets and risk variables, experiences managing life stressors, and experiences with suicidal ideation and other aspects of suicidality along a continuum of risk. Based on focus groups conducted prior to the national launch, the survey was predicted to take approximately twenty minutes for

participants to complete. Participants were allowed to skip questions and withdraw from the survey at any point. Randomly generated identification numbers were used to preserve the anonymity of participant responses. All participants, including those who declined to participate in the survey, exited the survey early and/or if they exhibited indicators of active suicidality, were provided with referral resources specific to their institution, such as contact information for their university's counseling center on campus and other local mental health and emergency contact information. This list of resources was also provided to all participants following their response to an item asking them to briefly describe the "worst point" of a recent stressful time period. In this way, for students who indicated that they were experiencing an acute level of distress at the time of taking the survey, such as active suicidal ideation, the survey was designed to assist in intervening with these students.

Approvals for the present study.

Prior to initiating data analysis for the present study, an application detailing the purpose and methods of the project was submitted to Chris Brownson, Ph.D., director of the National Research Consortium of Counseling Centers in Higher Education, and approval to use the de-identified data for the present project was granted. A proposal was submitted to the Institutional Review Board for the Protection of Human Subjects at The University of Texas at Austin, and upon review it was determined that this study did not meet criteria to be considered human subjects research. In an e-mail communication dated July 7, 2011, it was determined that additional review was not necessary as the

present study utilizes de-identified archival data from a larger study that had previously received approval by the committee.

Measures.

Demographic survey. Participants were asked to respond to questions providing information about their demographics, including gender, student status (i.e., undergraduate vs. graduate), race/ethnicity, and sexual orientation. Racial/ethnic information was assessed by participants' response to an item asking them to check all descriptions that apply from the following categories: African American, of African descent, African, of Caribbean descent, or Black; Asian or Asian American (e.g., Chinese, Japanese, Korean); Caucasian, White, of European descent, or European (including Spanish); Hispanic, Latino or Latina (e.g., Cuban American, Mexican American, Puerto Rican); Middle Eastern of East Indian (e.g., Pakistani, Iranian, or Egyptian); Native American (e.g., Dakota, Cherokee) or Alaskan Native; Native Hawaiian or other Pacific Islander (e.g., Samoan, Papuan, Tahitian); and other. Student status was determined by participants' response to an item asking them to check the description that best describes their grade classification: freshman; sophomore; junior; senior; medical student; law student; graduate student or other professional student; and non-degree-seeking student. For the purpose of this study, non-degree-seeking students were excluded from the analysis due to low sample sizes. Sexual orientation was determined by participants' response to an item asking them to check the description that best describes their orientation from the following options: bisexual, gay/lesbian,

heterosexual, questioning or other. Those respondents identifying as transgender were excluded from the analysis due to low sample sizes.

Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). The Cognitive and Affective Mindfulness Scale-Revised (CAMS-R) is a 12-item scale developed by Feldman, Hayes, Kumar, Greeson and Laurenceau (2007) to capture the multi-dimensional components of mindfulness in a brief format using accessible, everyday language. Specifically, the CAMS-R was designed to test a single, higher order factor of mindfulness that can be gathered from four first-order factors: attention, present-focus, awareness and acceptance. The CAMS-R uses a 4-point Likert scale ranging from 1 (Rarely/Not at all), 2 (Sometimes), 3 (Often), or 4 (Almost always). Sample items include, "*It is easy for me to concentrate on what I am doing," "I try to notice my thoughts without judging them,"* and *"I am able to focus on the present-moment."* (Feldman et al., 2007).

Feldman and colleagues (2007) conducted structural equation modeling (SEM) to test the performance of the revised CAMS and found the model to be a good fit [$\chi^2(50) = 81.04$, $p = .004$; RMSEA = .050; SRMR = .051; CFI = .95] with the chi-square test falling short of non-significance, which is an indication of model fit. Several of the inter-correlations between the four factors were found to be quite strong; however, a higher-order factor of mindfulness was found to fit the data well, thus accounting for the strong inter-correlations between the subscales (Feldman et al., 2007). Three of the four three-item subfactors exhibited low internal consistency, although the overall CAMS-R has demonstrated acceptable levels of internal consistency in the study conducted by

Feldman and colleagues and a study conducted by an independent research group, with Cronbach's alpha ranging from .74 to .81 (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Feldman et al., 2007). Thus, Feldman and colleagues (2007) advocate for the use of a single total mindfulness score rather than using the four subscale scores. Feldman et al. (2007) conducted analyses to explore several items that posed potential confounding with alternate constructs, and discovered that items 2 ("*I am preoccupied by the future"*) and 7 ("*I am preoccupied by the past"*) significantly overlapped with the constructs of worry and rumination. Thus to avoid potential construct contamination, Feldman and colleagues recommend the use of the alternate 10-item version of the CAMS-R, which is strongly correlated with the 12-item version ($r = .97$), for studies examining constructs that include components of worry, rumination, depression or anxiety. This 10-item version of the CAMS-R was used for the present study.

Finally, Feldman and colleagues (2007) found that the 10-item CAMS-R demonstrated adequate convergent and discriminant validity, exhibiting correlations in the predicted directions with other measures of mindfulness, in particular with the Mindful Attention Awareness Scale ($r = .46$, $p < .001$) and the Freiburg Mindfulness Inventory ($r = .69$, $p < .001$), and theoretically consistent constructs related to depression, well-being, emotion regulation and problem solving approaches. Specifically, the 10-item CAMS-R correlated significantly and negatively with the Anhedonic Depression subscale ($r = -.40$, $p < .001$) of the Mood and Anxiety Symptoms Scale. The CAMS-R also correlated positively and significantly with a scale measuring well-being ($r = .45$, $p < .001$), the Clarity of Feelings subscale ($r = .51$, $p < .001$) and the Mood Repair subscale (r

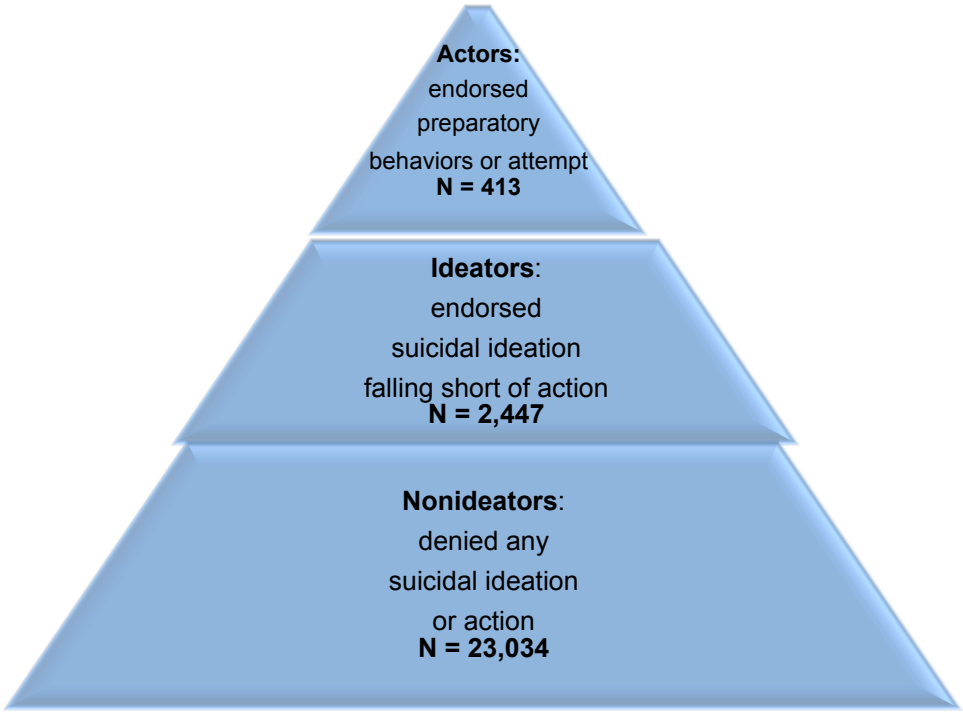
= .31, $p < .001$) of the Trait Meta-Mood Scale, and the Cognitive Flexibility Scale ($r = .47$, $p < .001$).

Self-Reported Distress. Questions in this section of the survey were aimed at determining level of distress and impairment of functioning during the worst point of a recent stressful period. Distress and functioning levels were assessed with participants' responses to a 5-point Likert scale ranging from 1 (not at all) to 5 (very) for the following items: *"At the worst point during this stressful period, how would you rate the following: How emotionally distressed were you?"* and *"How disrupted were you in your day-to-day functioning?"* Higher scores suggest higher levels of distress or disruption in functioning.

Suicidality during a Recent Stressor. Because suicidal thoughts and behaviors are believed to exist along a continuum of increasing severity (Drum et al., 2009; Konick & Gutierrez, 2005), those respondents who had recently engaged in a diverse range of suicidal cognitions and behaviors varying in severity were the focus of this study. Questions in this section of the survey were aimed at assessing respondents' experiences with suicidality during the worst point of a recent stressful period, including distressing thoughts, giving serious consideration to a suicide attempt, strength of intent to make an attempt, preparatory behaviors and attempting suicide. Participants selected all that applied for the following item in order to indicate presence of distressing or suicidal thoughts: *"During the stressful period, did you have any thoughts similar to the following: This is all just too much; I wish this would all end; I have to escape; I wish I was dead; I want to kill myself; I might kill myself; I will kill myself; and I did not have*

any thoughts like these." To determine participants' serious contemplation of suicide during a recent stressful period, participants were provided a forced choice *"Yes"* or *"No"* to the following dichotomous item: *"During this stressful period, did you* ***seriously*** *considered attempting suicide?"* Drum and colleagues (2009) found two preparatory activities significantly increased the odds of making a suicide attempt—gathering material for an attempt and beginning the attempt but changing one's mind. The analysis for this study examined which of the preparatory behaviors assessed for in the current survey increased the odds for making an attempt during the recent stressor. This was assessed by recent ideators'—or those indicating seriously considering suicide during the recent stressor—endorsement of these activities from the following item: *"During this stressful period, did you do any of the following: investigated ways to kill myself; formed a specific plan for attempting suicide; gathered the material for a suicide attempt; wrote a suicide note but did not post it or leave it where others might read it; wrote a suicide note and shared it or posted it; wrote a will or otherwise put my affairs in order; formed a suicide pact with others; did a practice run of a suicide attempt; began a suicide attempt, then changed my mind;* and *none of the above."* To determine presence of a suicide attempt during a recent stressor, all recent ideators indicated *"Yes"* or *"No"* to the following dichotomous item: *"During this stressful period, did you attempt suicide?"* See Figure 3 for a visual representation of the three subsamples included in this analysis.

Figure 3: Representation of *Nonideator*, *Ideator*, and *Actor* subsamples



For those endorsing seriously contemplating suicide during a recent stressor, strength of intent was assessed with the following continuous item on a 5-point Likert scale ranging from 1 (Not at all strong) to 5 (Very strong): *"When these thoughts were at their most intense, how strong was your intent to kill yourself?"* Lastly, given the established association between lifetime history of a suicide attempt and presence of suicidal thoughts and behaviors (Brent et al., 1999; Coryell & Young, 2005; Joiner et al., 2005; Limosin et al., 2007; Maris, 1992; Maser et al., 2002; Owens et al., 2003; Schwartz, 2006b; Suominen, Isometsa, Suokas et al., 2004), history of suicide attempts was examined for the merit of including it in the analysis as a covariate. Lifetime history

of attempts was indicated by participants' forced choice of any numeral greater than zero for the item, *"How many times in your life have you attempted suicide?"*

Several of the aforementioned items were replicated from the first suicidality study conducted by the National Research Consortium. In addition, all of the suicidality items were generated and agreed upon by the members of the National Research Consortium of Counseling Centers in Higher Education, with input provided by prominent experts in the field of college student suicidality and final approval provided by directors of participating counseling centers across the nation. The entire survey is available in Appendix B, with the items of interest for the present study highlighted.

Data Analysis Procedures.

Preliminary analyses (e.g. frequencies and percentages) were conducted to describe the sample and identify the variables to include in the final models using SPSS Version 16.0. Prior to the primary data analysis, the categorical variable was coded to differentiate *Nonideators*, *Ideators,* and *Actors* (see Figure 3). This was done by categorizing the suicidality items according to overt indicators (e.g., *"I will kill myself"*) of suicidal thoughts and behaviors and conducting reliability analyses to determine if these items conceptually hung together. Items were then dummy coded to create the multinomial variable named Suicide, capturing the three categories of individuals endorsing absence of suicidal cognitions and behaviors (1 = absence of thoughts/behaviors), presence of suicidal cognitions and behaviors (2 = presence of thoughts & behaviors) and, to create the reference category, presence of suicidal thoughts

only (3 = presence of thoughts). Because risk for suicide is believed to progress from ideation to action (Drum et al., 2009; Joiner et al., 2005; Schwartz, 2006a; Westefeld et al., 2005), statistical comparisons were made between the *Nonideators* and *Ideators* groups, and then between the *Ideators* and *Actors* groups, attending to capture this continuum effect.

Due to the nested structure of the data, multinomial multilevel modeling was used to conduct significance tests. Multilevel modeling, an extension of multiple regression, can account for the dependency due to the nested structure of the data, with students nested within schools. When such dependency is present, traditional analysis violates the independence assumption required of multiple regression and traditional analysis can yield standard errors that are too small, increasing the potential for a Type 1 error (MacKinnon, 2008). Further, the present study utilized a multinomial logistic regression, and logistic regression violates the assumptions of ordinary least squares regression of normality of residuals and homogeneity of variance (Raudenbush & Bryk, 2002). However, the logit function inherent in logistic regression corrects for the non-normality and heterogeneous variance of binary, or in this case multinomial, data. In this design, the first level pertains to the students while the second level pertains to participants' respective colleges and universities. Because the purpose of the present analysis was to examine the relationship between participant characteristics and outcomes of suicidality, the lower level unit of analysis, the individual level, was of primary interest. However, a preliminary analysis was conducted to assess for presence of contextual effects by examining the intra-class correlations of the level-1 predictor variables, and if contextual

effects were present, the aggregated variable was included in the final model. Effects, in particular the intercept, were allowed to vary across schools, which accounted for the dependency inherent in the data. Lastly, given the associations identified in the literature of key demographic variables to the outcome variables of interest, including gender, race/ethnicity, student status, age, sexual orientation and presence of a prior attempt (Bingham et al., 1994; Brent et al., 1999; Brownson et al., 2011; Canino & Roberts, 2001; Coryell & Young, 2005; D'Augelli et al., 2006; Gutierrez et al., 2005; Joiner et al., 2005; Kisch, Leino, & Silverman, 2005; LeMaster et al., 2004; Limosin et al., 2007; Maris, 1992; Maser et al., 2002; Owens et al., 2003; Schwartz, 2006b; Suominen et al., 2004), preliminary analysis was conducted to determine whether to include these variables as covariates in the final model.

Chapter Four: Results

Preliminary Analysis

Coding scheme for categorical outcome variable.

Prior to the primary data analysis, the categorical variable Suicide was coded to differentiate *Nonideators*, *Ideators,* and *Actors* (see Figure 3). This was done by clustering the suicidality items according to overt indicators (e.g., *"I will kill myself"*) of suicidal thoughts and behaviors and conducting reliability analyses as a guide to determine if these items hung together conceptually. However, the final decision to classify the items in the distinct categories depended on whether respondents answered in the affirmative to specific questions. For example, if a respondent indicated "yes" to the item, *"during the stressful period, did you seriously consider attempting suicide,"* then they were included in the *Ideators* category.

For the *Nonideators* group, reliability was assessed for the following items, *"during the stressful period, did you have any thoughts similar to the following: This is all just too much; I wish this would all end; I have to escape,"* and were found to have a Cronbach's alpha of .614. Those who endorsed the item *"I did not have any thoughts like these"* were also included in this category by the inherent absence of suicidal thoughts and behaviors for those responding in the affirmative to this item. For the *Ideators* group, reliability was assessed for the following items, *"during the stressful period, did you have any thoughts similar to the following: I wish I was dead; I want to kill myself; I*

might kill myself; I will kill myself," and *"during this stressful period, did you* ***seriously*** *considered attempting suicide,"* and were found to have a Cronbach's alpha of .766.

Preliminary analysis was conducted in order to determine which preparatory behaviors were predictive of an attempt during the recent stressor. For all of the following analyses, missing data at level-1 was handled using listwise deletion when creating the MDM. A random-coefficient model was created including Attempt as the outcome variable and all preparatory behaviors as predictor variables with fixed effects. The following preparatory behaviors were not associated with presence of an attempt during the recent stressor and were removed from the model: *"investigated ways to kill myself; gathered the material for a suicide attempt; wrote a will or otherwise put my affairs in order;* and *formed a suicide pact with others."* One preparatory behavior, *"formed a specific plan for attempting suicide*" (OR = 0.631, t[1153] = -2.096, $p < .05$), actually reduced the odds of a recent attempt by a factor of 0.631, and was therefore not included in the final coding scheme. The final model found the following preparatory behaviors were predictive of increased likelihood of an attempt during the stressor: *"wrote a suicide note but did not post it or leave it where others might read it"* (OR = 2.709, t[1153] = 4.002, $p < .05$); *"wrote a suicide note and shared it or posted it"* (OR = 9.228, t[1153] = 3.017, $p < .05$); *"did a practice run of a suicide attempt"* (OR = 4.652, t[1153] = 3.106, $p < .05$); and *"began a suicide attempt, then changed my mind"* (OR = 13.076, t[1153] = 10.96, $p < .005$). These items were retained in the coding procedure described below for the *Actors* group.

For the *Actors* group, reliability was assessed by calculating the reliability of those aforementioned preparatory behaviors found predictive of a prior attempt along with the item assessing for presence of an attempt, *"during this stressful period, did you attempt suicide."* All items together exhibited a Cronbach's alpha of .537. Analysis indicated that if the item *"I will kill myself"* was deleted from the *Ideators* group that Cronbach's alpha would increase to .773, and thus this item was added to the *Actors* group and the alpha value for this category increased to .584. Thus, this item was retained in the *Actors* category. The demographic characteristics of the categorical variable are included in Table 4.1. Further, a description of all dummy coded variables used in the quantitative analyses is provided in Table 4.2.

Table 4.1
Student Demographics and Categorical Variable Suicide

	Nonideator N = 23,034	**Ideator** N = 2,447	**Actor** N = 413
Prior Attempt			
Yes	4.3%	16.5%	61.7%
Student Status			
Undergraduate	52.9%	59.4%	72.9%
Graduate	47.1%	40.6%	27.1%
Gender			
Female	62.8%[a]	63.6%	63.6%
Male	37.1%	36.1%	36.1%
Age	$\bar{x}$ = 27	$\bar{x}$ = 25	$\bar{x}$ = 24
18-21	38.0%	43.9%	50.5%
22-25	26.9%	26.2%	24.8%
26-29	14.6%	12.8%	9.7%
30-39	13.1%	11.9%	9.9%
40+	7.3%	5.2%	5.2%
Race/Ethnicity			
African American	4.3%	4.2%	4.8%
Asian American	9.7%	12.6%	14.0%
Caucasian	70.5%	65.1%	61.3%
Latino/a	5.7%	5.7%	6.3%
Middle Eastern/East Indian	2.1%	3.0%	1.7%
Native American/Alaskan Native	0.3%	0.2%	0.7%
Native Hawaiian	0.2%	0.1%	0.0%
Multiethnic	5.2%	7.0%	8.5%
Other	1.6%	1.8%	2.4%
Sexual Orientation			
Bisexual	2.9%	6.5%	12.0%
Gay/Lesbian	2.3%	3.9%	6.3%
Heterosexual	92.8%	85.3%	75.4%
Questioning	0.8%	2.3%	3.9%
Other	1.3%	0.2%	2.4%

[a] Note: The Gender category does not sum to 100% as the respondents identifying as *Transgender* were removed from this analysis due to low sample sizes.

Table 4.2
Student Variable Descriptions

Dummy Coded Variables	**Formation Protocol**
Suicide	*Nonideators Group:* students who selected "True" for survey item 63 *"during the stressful period, did you have any thoughts similar to the following: This is all just too much; I wish this would all end; I have to escape;* and *I did not have any thoughts like these"* were coded "1". *Actors Group:* students who responded "True" for survey item 63 *"during the stressful period, did you have any thoughts similar to the following: I will kill myself"* and for the survey item 66 *"during the stressful period, did you do any of the following: wrote a suicide note but did not post it or leave it where others might read it, wrote a suicide note and shared it or posted it, did a practice run of a suicide attempt, began a suicide attempt, then changed my mind*" and for survey item 67 *"during this stressful period, did you attempt suicide"* were coded "2." *Ideators Group* (reference category): students who responded "True" for survey item 63 *"during the stressful period, did you have any thoughts similar to the following: I wish I was dead; I want to kill myself;* and *I might kill myself;"* and survey item 64 *"during this stressful period, did you* ***seriously*** *considered attempting suicide"* were coded "3."
Prior Attempt	Students who responded "0" to survey item 30 *"how many times in your life have you attempted suicide"* were coded "0;" those who endorsed one or more lifetime suicide attempts were coded "1."
Gender	Students who selected "female" for survey item 2 were coded "1;" those who selected "male" were coded "0." Transgender students were excluded from the analysis due to low sample sizes.
Age	Students who selected "18-21" for their age for survey item 1 were coded "1;" students who selected "22-25" for their age for survey item 1 were coded "2;" students who selected "26-29" for their age were coded "3;" students who selected "30-39" for their age were coded "4;" students who selected "40" or greater for their age were coded "5"
Graduate	Students who responded "1-4" to survey item 6 were coded "0" for undergraduate status; students who responded "5-7" were coded "1" for graduate student status. Non-degree-seeking students were excluded from this analysis due to low sample sizes.

Table 4.2 Continued	*Student Variable Descriptions*
Race/Ethnicity	
African American	Students who selected only *"African American, of African descent, African, of Caribbean descent, or Black"* for survey item 3 were coded "1"
Asian American	Students who selected only *"Asian or Asian American"* for survey item 3 were coded "2"
Caucasian/White	Students who selected only *"Caucasian, White, of European descent, or European (including Spanish)"* for survey item 3 were coded "3"
Latino/a	Students who selected only *"Hispanic, Latino or Latina"* for survey item 3 were coded "4"
Middle Eastern / East Indian	Students who selected only *"Middle Eastern or East Indian"* for survey item 3 were coded "5"
Native American/Alaska Native	Students who selected only *"Native American or Alaska Native"* for survey item 3 were coded "6"
Native Hawaiian/ Pacific Islander	Students who selected only *"Native Hawaiian or other Pacific Islander"* for survey item 3 were coded "7"
Other	Students who selected only *"Other, please specify"* for survey item 3 were coded "8"
Multiracial / ethnic	Students who selected more than one from the above categories for survey item 3 were coded "9"
Sexual Orientation	
Bisexual	Students who selected *"Bisexual"* for survey item 7 were coded "1," those who did not were coded "0."
Gay/Lesbian	Students who selected *"Gay or Lesbian"* for survey item 7 were coded "1," those who did not were coded "0."
Heterosexual	Students who selected *"Heterosexual"* for survey item 7 were coded "1," those who did not were coded "0."
Questioning	Students who selected "*Questioning"* for survey item 7 were coded "1," those who did not were coded "0."
Other	Students who selected *"Other, please specify"* for survey item 7 were coded "1," those who did not were coded "0."

Selection of variables to include in the final model.

Assessing for contextual effects.

In order to assess for presence of contextual affects, intra-class correlations were calculated for the predictor and outcome variables of interest, including distress, mindfulness, strength of intent, and presence of a lifetime attempt. The intra-class correlation (ICC) measures the proportion of variance in the outcome that is between groups (Raudenbush & Bryk, 2002). The ICC is calculated by taking the proportion of the level 2 variance to the sum of the level 2 and level 1 variance for the unconditional model of each variable, or $\rho = \tau_{oo}/(\sigma^2 + \tau_{oo})$. For the present study, all variables exhibited small ICCs (less than 2%), with the exception of the item assessing for presence of a prior lifetime attempt ($\rho = .125$). This indicates that 12.5% of the variance in presence of a prior lifetime attempt is between schools, suggesting that multilevel modeling is indicated and the aggregate of the attempt variable should be included in the second level of the model.

Historical and demographic predictors of suicidality.

To determine if demographic and historical variables predicted key outcomes of interest, all theoretically indicated variables, including gender, sexual orientation, age, student status, race/ethnicity and presence of a prior suicide attempt, were included in models with both Suicide and Strength of Intent as the outcome variables.

An initial model examining possible covariates included Suicide as the outcome variable and gender, sexual orientation, age, student status, race/ethnicity and presence of

a prior suicide attempt as predictor variables. Gender, race/ethnicity, and identifying as gay/lesbian, heterosexual or other for sexual orientation were not associated with the outcome variable Suicide and thus were removed from the final model. In other words, being male or female, belonging to a particular racial or ethnic group, and identifying as gay, lesbian, heterosexual or other sexual identity status did not significantly influence membership in the *Nonideators* (i.e., denying presence of suicidal thoughts or behaviors), *Ideators* (i.e., endorsing recent suicidal thoughts but not behaviors), or *Actors* group (i.e., endorsing recent suicidal thoughts *and* behaviors). A final model resulted in student status, age, presence of a prior attempt and identifying as bisexual or questioning as predictive of group membership in the *Nonideators* as compared to the reference category: the *Ideators* group. This final model also resulted in only student status and presence of a prior attempt predicting membership in the *Ideators* or *Actors* group. A table showing the results of the final covariates model is available in Appendix C.

For the *Nonideator* versus the reference *Ideator* category, graduate students were more likely to belong to the *Nonideator* than the *Ideator* group as compared to undergraduate students ($OR = 1.129$, $t[24{,}919] = 2.036$, $p < .05$). As students endorsed an age category increasing by 1 point, the odds of belonging to the *Nonideator* group increased by a factor of 1.08 ($OR = 1.085$, $t[24{,}919] = 3.409$, $p < .05$). Having a prior attempt increased the odds of belonging to the *Ideator* group as compared to the *Nonideators* group by a factor of 4.2 (Inverse of $OR = 0.238$, $t[24{,}919] = -21.527$, $p < .05$). Lastly, identifying as bisexual ($OR = 0.506$, $t[24{,}919] = -7.009$, $p < .05$) or

questioning (*OR* = 0.415, *t*[24,919] = -5.334, p < .05) increased the odds of belonging to the *Ideator* group as compared to the *Nonideator* group.

For the *Ideator* versus *Actor* comparison, graduate students were less likely to belong to the *Actor* group than the *Ideator* group as compared to undergraduate students (*OR* = 0.7008, *t*[24,919] = -2.263, p < .05). Presence of a prior attempt increased the odds of belonging to the *Actors* group as compared to the *Ideators* group by a factor of 8 (*OR* = 8.03, *t*[24,919] = 17.219, p < .05). Given these results for the three categories of the Suicide outcome variable, for the final model only the Student Status, Age, Attempt, Bisexual and Questioning variables were included as covariates in this model.

An initial model examining possible covariates included Strength of Intent as the outcome variable and gender, sexual orientation, age, student status, race/ethnicity and presence of a prior suicide attempt as predictor variables. Gender, race/ethnicity and sexual orientation were not associated with Strength of Intent, and thus were removed from the model. A final model resulted in age predicting strength of intent such that as students endorsed a higher age category by 1 point, the strength of intent increased by 0.09 points (γ_{20} = 0.095, *t*[1131] = 2.603, p < .05). Graduate students exhibited a flatter slope for strength of intent, with intent .25 points lower than undergraduate students (γ_{10} = -0.25, *t*[1131] = -2.657, p < .05). Presence of a prior attempt predicted strength of intent such that on average those with a prior attempt endorsed a strength of intent score .75 points higher than those without a prior attempt (γ_{30} = 0.746, *t*[1131] = 10.854, p < .05). Thus, for the final model with Strength of Intent as the outcome, only the Age, Student

Status and Attempt variables were included as covariates in the model. The results for all HLM final models are available in Appendix C.

Quantifying distress.

In order to determine if definitional overlap existed between the two continuous items assessing for self-reported distress and disruption of functioning during the recent stressor, reliability was calculated to assess for the strength of association between these two items. Crobach's alpha was found to be .582. However, because this alpha level is not greater than .70 or .80, it is not regarded as being in the acceptable range for a reliability value (Nunnally & Bernstein, 1994), thus not warranting the use of an average composite score for this construct. For the purpose of the present analysis, the distress item alone was used to assess for self-reported distress levels during the recent stressor.

Primary Analysis

Research question 1.

This analysis sought to determine whether students endorsing increased levels of distress are more or less likely to exhibit suicidal thoughts and behaviors, after controlling for the effects of key demographic and historical variables. A model was generated with the three level categorical variable Suicide as the outcome of the mean of Prior Attempt at each school, Graduate, Age, Prior Attempt, Bisexual, Questioning, Distress, Mindfulness and the interaction of Distress and Mindfulness. For this model, only the intercept was allowed to vary and all other effects were treated as fixed. Effects were allowed to vary sequentially in successive models, however; these models did not

converge, suggesting very little variation across schools and that these effects were in fact fixed.

Distress Predicting Membership in Nonideators versus Ideators groups.

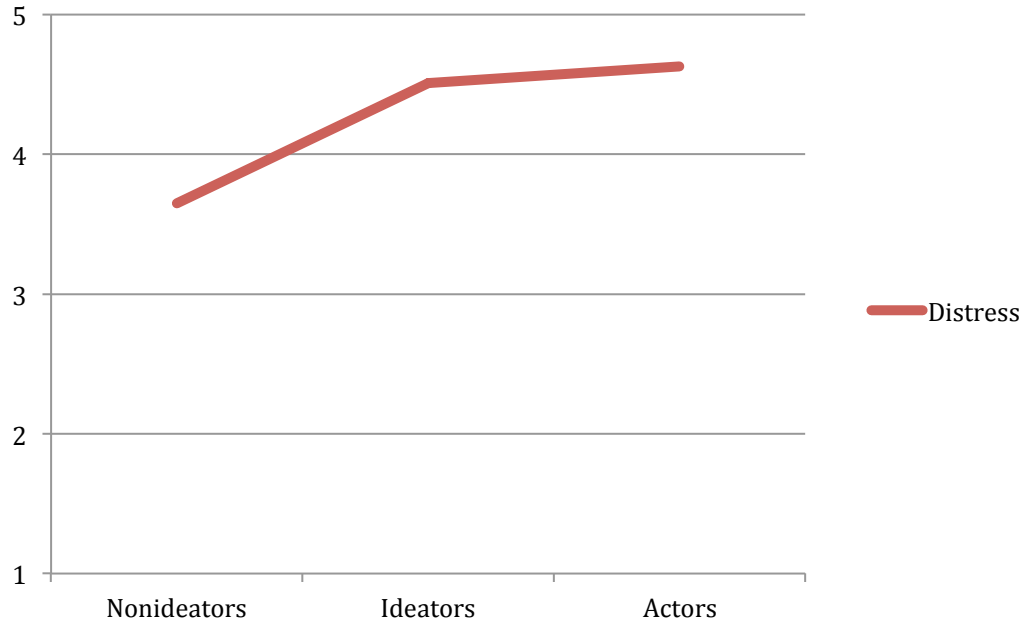
For an undergraduate without a prior attempt, the odds of belonging to the *Nonideators* group was nearly 16 times the odds of belonging to the *Ideators* group and that this difference holds in the population (*OR* = 15.598, *t* [74] = 30.49, p < .05). Those with a prior lifetime attempt were nearly three times as likely to belong to the *Ideators* group than the *Nonideators* group compared to those without an attempt (Inverse of *OR* = 0.335, *t* [23,499] = -14.72, p < .05). Identifying as bisexual (*OR* = 0.593, *t* [23,499] = -4.947, p < .05) or questioning (*OR* = 0.546, *t* [23,499] = -3.382, p < .05) increased the odds of belonging to the *Ideators* group as compared to the *Nonideators* group. Age (*OR* = 1.049, *t* [23,499] = 1.853, p > .05) and student status (*OR* = 1.088, *t* [23,499] = 1.292, p > .05) did not emerge as predictive of belonging to the *Nonideators* versus the *Ideators* group in this final model. Also, the school-level mean of prior lifetime attempts did not predict group membership (*OR* = 1.171, *t* [74] = 0.145, p > .05). As distress increased by 1, the odds of having suicidal thoughts increased by a factor of 2.26, as compared to not having suicidal thoughts (Inverse of *OR* = 0.442, *t* [23,499] = -24.483, p < .05).

Distress Predicting Membership in Actors versus Ideators groups.

For an undergraduate without a prior attempt, the odds of belonging to the *Ideators* group was over eleven times the odds of belonging to the *Actors* group and that this association exists in the population (Inverse of *OR* = 0.086, *t* [74] = -11.345, p < .05).

Student status (*OR* = 0.724, *t* [23,499] = -1.913, p > .05), age (*OR* = 0.895, *t* [23,499] = -1.711, p > .05) and identifying as bisexual (*OR* = 1.346, *t* [23,499] = 1.547, p > .05) or questioning (*OR* = 1.308, *t* [23,499] = 0.814, p > .05) did not emerge as predictive of belonging to the *Actors* versus the *Ideators* group in this final model. Also, the aggregated effect of the mean of lifetime prior attempt did not predict group membership (*OR* = 3.617, *t* [74] = 0.561, p > .5). At the individual level, those with a prior lifetime attempt were nearly eight times as likely to belong to the *Actors* group rather than the *Ideators* group compared to those without a prior attempt (*OR* = 7.87, *t* [23,499] = 16.298, p < .05). The effect of distress on membership in the *Actors* versus *Ideators* group was not significant (*OR* = 1.087, *t* [23,499] = 0.825, p > .05). See Figure 4 for a line graph depicting the mean distress levels for *Nonideators*, *Ideators*, and *Actors.*

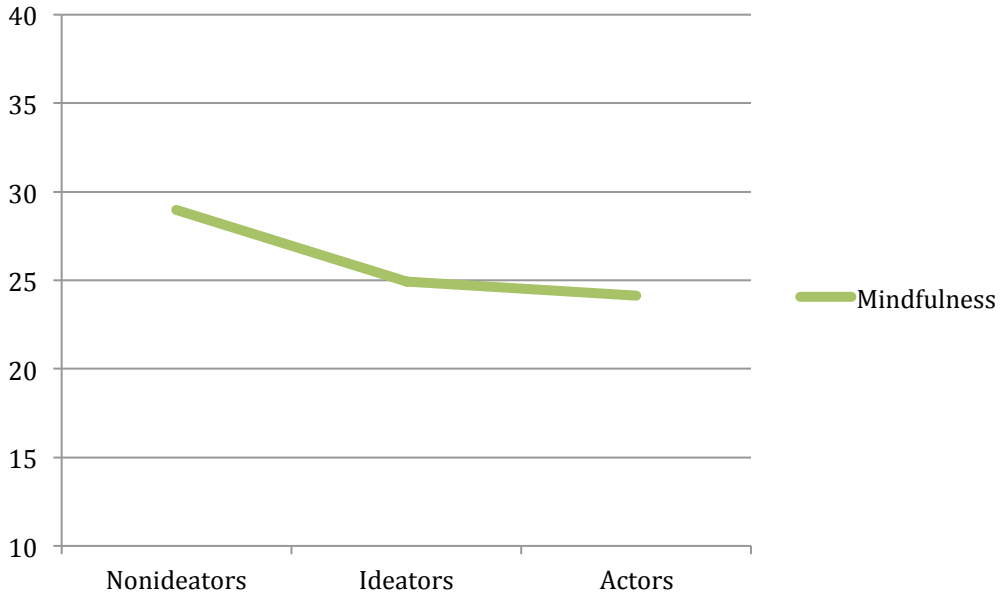
Figure 4. Mean Distress level in *Nonideators, Ideators,* and *Actors* groups (1 = "Not at all distressed" – 5 = "Very distressed").



Research question 2.

This analysis sought to determine whether students endorsing increased levels of dispositional mindfulness are more or less likely to exhibit suicidal thoughts and behaviors, after controlling for the effects of significant predictors of suicidality. A model was generated with the three level categorical variable Suicide as the outcome of the mean of Prior Attempt at the school level, Graduate, Age, Prior Attempt, Bisexual, Questioning, Distress, Mindfulness and the interaction of Distress and Mindfulness, with only the intercept allowed to vary. As Mindfulness increased by 1, the odds of belonging to the *Nonideator* group as compared to the *Ideator* group increased by a factor of 1.14 ($OR = 1.139$, t [23,499] = 19.668, $p < .05$). In contrast, the effect of Mindfulness on membership in the *Actors* versus *Ideators* group was not significant ($OR = 1.001$, t [23,499] = 0.027, $p > .5$). See Figure 5 for a line graph the mean mindfulness levels for *Nonideators*, *Ideators*, and *Actors.*

Figure 5. Mean Mindfulness level in *Nonideators, Ideators,* and *Actors* groups.



Research question 3.

This analysis sought to determine whether mindfulness offers greater protection against development of suicidal thoughts and behaviors at higher levels of distress, after controlling for the effects of significant predictors of suicidality. A model was generated with the three level categorical variable Suicide as the outcome of the mean of Prior Attempt at the school level, Graduate, Age, Prior Attempt, Bisexual, Questioning, Distress, Mindfulness and the interaction of Distress and Mindfulness, with only the intercept allowed to vary. The interaction effect of Distress X Mindfulness in predicting group membership in the *Nonideators* versus *Ideators* group was not significant (*OR* = 0.992, *t* [23,499] = -1.247, p > .05). Similarly, the same non-significant effect was found

for the interaction of Distress X Mindfulness in the *Actors* versus *Ideators* group (*OR* = 0.993, *t* [23,499] = -0.442, p > .5).

Research question 4.

This analysis sought to determine whether mindfulness, distress, and the interaction of mindfulness and distress are predictive of strength of intent during a recent suicidal crisis after controlling for all significant demographic and historical variables. An initial model was generated with Strength of Intent as the outcome of Graduate, Age, Prior Attempt, Distress, Mindfulness and the interaction of Distress and Mindfulness, with only the intercept allowed to vary. For an undergraduate without a prior attempt and holding all other variables constant, the mean strength of intent was 2.753. At a typical school for graduate students without a prior attempt and holding all other variables constant, strength of intent was lower on an average of .24 points compared to undergraduates (γ_{10} = -0.235, *t*[1086] = -2.6, p < .05). For those students endorsing 1 point higher in age category, strength of intent was on average .085 points higher than younger students (γ_{20} = 0.085, *t*[1086] = 2.260, p < .05). For those with a prior attempt, strength of intent was on average .77 points higher (γ_{30} = 0.765, *t*[1086] = 11.108, p < .05). Also, as distress increased by 1, strength of intent increased by .256 (γ_{40} = 0.256, *t*[1086] = 5.256, p < .05). Mindfulness (γ_{50} = -0.007, *t*[1086] = -0.797, p > .05) and the interaction of Mindfulness and Distress (γ_{60} = -0.005, *t*[1086] = -0.753, p < .05) did not

emerge as significant in predicting strength of intent to commit suicide during a recent stressor.

Chapter Five: Discussion and Implications

The central aim of this study was to examine the relationship between dispositional mindfulness, distress, covariates of suicidality, and membership along various points of the suicidal continuum. In sum, those students endorsing higher trait levels of mindfulness were more likely to belong to the group who denied experiencing suicidal thoughts during a recent stressor in reference to those endorsing thoughts. However, differences were not found between trait levels of mindfulness and likelihood of belonging to the group endorsing suicidal thoughts and behaviors versus those endorsing just thoughts. Further, results of the present study do not provide support for the buffering effect of mindfulness in preventing suicidal thoughts and behaviors as distress increases. Clarifying who along this continuum receives the greatest protective benefit from possessing higher mindfulness levels has implications for population-based prevention and health promotion initiatives. In this chapter, findings from the present study regarding the relationship of mindfulness, distress and suicidality will be discussed and integrated with directions for future research. Next, implications for developing population- and group-based interventions will be discussed within the context of two typologies for intervening on college campuses. Lastly, the chapter will conclude with a discussion of the study strengths, limitations and future directions.

Demographic Predictors of Suicidality and Intent

While not an explicit research question for the current study, review of the extant literature indicated that certain demographic and historical variables have been predictive

of suicidal ideation and attempts, and thus warranted inclusion in the present analysis. Therefore an implied question involved validating the predictive utility of these variables. The present analysis discovered that—consistent with the robust literature supporting this relationship (Brent et al., 1999; Coryell & Young, 2005; Joiner et al., 2005; Limosin, Loze, Philippe, Casadebaig, & Rouillon, 2007; Maris, 1992; Maser et al., 2002; Owens, Booth, Briscoe, Lawrence, & Lloyd, 2003; Schwartz, 2006a; Suominen et al., 2004)—presence of a prior lifetime attempt was predictive of both presence of suicidal ideation and suicidal behaviors during a recent stressful time period. Presence of a prior attempt more robustly predicted presence of suicidal behaviors than suicidal thoughts, such that those with a prior attempt were over twice as likely to have engaged in suicidal behaviors during a recent stressful period rather than just endorsing suicidal thoughts. These findings mirror what Joiner and colleagues have discovered about the habituation properties of prior episodes of self-harm or attempts, essentially inuring the individual to the suicidal act and increasing their capability to engage in these behaviors (Anestis & Joiner, 2011; Bryan et al., 2010; Joiner et al., 2005; Joiner et al., 2009). While not a new discovery, the validation of this relationship in this large sample of college students underscores the importance of universities attending to lifetime history of mental health concerns, including presence of an attempt at some point in the student's lifetime. Mental health screeners, perhaps distributed universally to the incoming student population, could include items inquiring about this history and potentially identify students at elevated risk and vulnerability for acting on suicidal thoughts when under duress.

Also consistent with existing literature about sexual minority youth and students increased risk for suicidality (for a review see Haas et al., 2011; Kisch, Leino, & Silverman, 2005; Marshal et al., 2011; Needham & Austin, 2010), respondents identifying as bisexual or questioning were nearly twice as likely as heterosexual respondents to endorse suicidal thoughts during the recent stressor. There is mixed evidence regarding sexual minority students being more or less likely to seek professional help (Adams, 2009; Ciro et al., 2005; Grella, Greenwell, Mays, & Cochran, 2009), and some evidence indicates that sexual minority students are less likely to receive parental and peer support (D'Augelli, Grossman, & Starks, 2008; Diamond et al., 2011; Needham & Austin, 2010). These students may feel silenced due to fears of discrimination related to their sexual orientation (D'Augelli, Grossman, & Starks, 2008), leaving them to struggle without the aid of their peers or family members. Given the findings that the majority of students turn to their peers or family members during times of suicidal crisis (Drum et al., 2009), it is concerning that sexual minority students may be missing out on this key form of support. These findings highlight the need for programming targeted toward this population to raise awareness about the prevalence of and seriousness of suicidal ideation among this subgroup and the availability of mental health services on campus. Furthermore, campus campaigns could target the broader population to encourage a more supportive community and increased help-seeking of LGBTQ populations experiencing increased suicidal ideation.

With respect to strength of intent of taking one's life during a recent suicidal crisis, the overall mean of this item across schools was just above the mid-point at 2.75.

This indicates that overall, strength of intent for those seriously contemplating suicide during a recent stressor does not fall at the acute end of this continuum (5 being the extreme pole, indicating very strong intent). On average, graduate student ideators exhibited significantly lower strength of intent compared to undergraduate student ideators, which was consistent with findings from the last study conducted by the National Research Consortium of Counseling Centers in Higher Education (Brownson, Drum, Smith, & Denmark, 2011). Further, presence of a prior lifetime attempt was found to be predictive of higher strength of intent during a recent suicidal crisis. This is consistent with other literature, which has found that most survivors of a prior attempt reported either strong intent to die or ambivalence about dying at the time of their attempt (Kessler et al., 1999; Nock & Kessler, 2006). This provides further support that universities need to solicit the background of their students' mental health history in order to distinguish those students who could be at increased risk for attempt when coping abilities are overwhelmed.

Distress and Suicidality

Stress and its more acute analog, distress, have received much attention in the literature for their contribution to the development of suicidal thoughts and behaviors. Negative life stress has been found to precipitate suicidal crises for college students (Bonner & Rich, 1987; Konick & Gutierrez, 2005; Schotte & Clum, 1982), and perceived stress in particular may provide the most predictive utility in determining the impact of

life stressors on maldaptive coping responses (Bonner & Rich, 1988; Hirsch & Ellis, 1996; Monroe, 2008).

The present study found that, controlling for other predictors of suicidality, distress increased the likelihood of endorsing suicidal cognitions during a recent stressful time period, but had no association in predicting the likelihood of endorsing suicidal behaviors above and beyond suicidal ideation. It may be that what is most distressing to students are initial thoughts of suicide, which on some level may be ego-dystonic for the individual, but that at the behaviors threshold the individual has become habituated to suicidal thoughts and is thus less distressed by them. Ongoing exposure to suicidality, perhaps similar to recurrent experience with depression (Nandrino, Pezard, Posté, Réveillère, & Beaune, 2002; Netta, Klomek, & Apter, 2008), decreases the threshold for future suicidal behavior and may diminish emotion dysregulation generated by presence of suicidal thinking (Anestis, Bagge, Tull, & Joiner, 2011; Joiner & Rudd, 2000; Rudd, 2000). Essentially, an individual with repeated exposure to suicidality may have a "new normal" compared to their newly-ideating peers that reduces the amount of subjective distress experienced by the person. These findings are consistent with other research that discovered the relationship between traumatic events and suicidality was largely predictive of the development of suicidal ideation, rather than of the progression from suicidal thoughts to attempts or the persistence of suicidal behavior (Stein et al., 2010). From a prevention standpoint, these results are distressing in that most students who die by suicide do not receive help from the university counseling center (Barr, Krylowicz, Reetz, Mistler & Rando, 2011). As such the marker of distress, which may serve as

motivation driving students into professional help, is not distinguishing those students in the most acute phase of a suicidal crisis.

Lastly, the present study found that as distress increased, strength of intent increased by a quarter of a point. While this analysis controlled for presence of a prior attempt, it did not examine the degree to which those with higher intent had actually acted on their suicidal thoughts during the stressful time period. While other research has examined self-reported intent to die with relation to surviving an attempt (Kessler, Borges, & Walters, 1999; Nock & Kessler, 2006), future research could benefit from tracking the progression of intent alongside the progression of increasingly severe behaviors (e.g., beginning an attempt and changing one's mind) up to and including an attempt.

Mindfulness and Suicidality

Given the promising findings in the outcome literature of mindfulness training as an intervention to reduce the recurrence and intensity of psychological disorders—including depression and depression relapse (Baer, 2003; Grossman et al., 2003; Hoffman et al., 2010; Ma & Teasdale, 2004; Teasdale et al., 2000), anxiety (Baer, 2003; Grossman et al., 2003; Hoffman et al., 2010), and suicidal thoughts and behaviors within specified populations (Koons et al., 2001)—a primary research question of the present study was to determine where along the continuum of suicidality mindfulness conveys the most protection within a population of college students. Results indicated that, controlling for other predictors of suicidality, higher levels of dispositional mindfulness increased the

likelihood of denying experiencing suicidal thoughts during a recent stressful period by a factor of 1.14. However, trait levels of mindfulness provided no predictive utility in distinguishing between those endorsing suicidal thoughts from those endorsing suicidal behaviors. Thus, mindfulness appears to convey protection at the gateway of entering *onto* the suicidal continuum; however once suicidal, mindfulness does not appear to predict the likelihood of one progressing further *along* that continuum.

For those not yet on the suicidal continuum, mindfulness may serve as a "metacognitive skill" (Bishop et al., 2004), fostering greater awareness of what is needed in order to cope with a life stressor. In line with the conceptualization of mindfulness generating increased self-regulation of attention (Bishop et al., 2004), the more dispositionally mindful individual may be better able to track within him- or herself when distress levels are on the rise, and thus intervene with adaptive coping earlier. Future research could examine the relationship between those endorsing low or high dispositional mindfulness and adaptive coping utilized during a life stressor.

Consistent with findings of the effect of mindfulness training on a range of adaptive outcomes (Broderick, 2005; Brown & Ryan, 2003; Chambers, Lo & Allen, 2008; Frewen et al., 2008; Hepburn, Crane, Barnhofer, et al., 2009; Kumar, Feldman & Hayes, 2008), the more mindful individual may be better able to enter into the "whole mode of mind" (Williams, 2008), being less likely to suppress or elaborate upon thoughts and emotions related to the stressor, perhaps reducing emotional reactivity (Arch & Craske, 2006; Feldman et al., 2007; Schartau et al., 2009), and thereby freeing up more cognitive capacity to choose an approach that will not exacerbate the stressor. Relatedly,

the mindful individual may be better able to see current stressors and the internal evaluations of those stressors as transient, contextual events that will, by definition, shift over time, which could aid in a decoupling from one's sense of self as it relates to the stressor. The rumination cycle, so common among those with depressive symptoms, may be more skillfully interrupted by a mindful orientation to experience, as the individual would have increased ability to see rumination for what it is: a mental event not requiring further elaboration (Teasdale, Segal & Williams, 1995; Teasdale et al., 2002). These findings are akin to the concept of "suicide resilience" penned by Osman and colleagues (2004), which the authors characterize as comprising three distinct domains: *internal protective, external protective* and *emotional stability*. Related to the aforementioned points, mindfulness may buttress the *emotional stability* domain of this construct, in that an individual possessing greater mindful awareness may be better able to regulate suicidal thoughts when confronted with negative life events or other perceived stressors.

In contrast, the present study found a non-significant relationship between mindfulness and progression into the behavioral realm of acting on one's suicidal thoughts. Thus, for those having already entered the suicidal continuum, levels of dispositional mindfulness did not hold sway over one's progression from suicidal thinking to taking action on suicidal thoughts. Thus, relative to their nonsuicidal peers, those endorsing suicidal thoughts and behaviors may be less likely to access the more expansive, decentered self typically present, obscuring belief systems such that Williams' (2008) "whole mode of mind" cannot penetrate. Thus, the increasingly suicidal individual, in comparison to one who is not suicidal, may be demonstrating less

capability to use the self to defend self. This may be consonant with Baumeister's (1990) concept of suicide as a mechanism for "escape from self" and Rudd's (2000) concept of the "suicidal mode," such that aversive self-awareness elevates to such a degree that a belief system in which suicide is the only foreseeable option for alleviating this aversion supplants alternative and potentially more adaptive schemata.

Further, consistent with the diathesis-stress theory of suicidality (Rudd, 2009), presence of a cognitively-based diathesis for an individual at the threshold of acting on suicidal thoughts may be more intractable and thus less influenced by the protective benefit of mindfulness. The core beliefs contributing to this diathesis appear to predispose an individual to be vulnerable to act on their suicidal thoughts, and these belief systems may be so deeply entrenched that alternative belief systems cannot penetrate. Future research might explore the extent to which mindfulness training for individuals with a cognitively-based diathesis predisposing them to suicide (e.g., hopelessness) can mitigate the effects of this diathesis and convey protection through this mediating diathesis. Research is currently underway exploring the unique benefit mindfulness training imparts above and beyond the benefit of cognitive-behavioral therapy in reducing the incidence of suicidal ideation and attempts in a sample of depression vulnerable individuals (Williams et al., 2010). The findings from this randomized controlled trial may begin to provide answers to the questions raised here.

In the present study, the relationship between mindfulness and strength of intent did not emerge as significant. Perhaps due to the limitations of the items used to measure both mindfulness and strength of intent, or the unique characteristics of those endorsing

greater strength of intent, effects did not emerge in this examination. Future research could inquire into this relationship with greater depth, attempting to isolate whether sub-constructs of mindfulness are uniquely related to intent as it increases during a suicidal crisis.

In sum, mindfulness serves as a protection at the threshold of suicidal thoughts, but this relationship does not hold at the threshold of suicidal behaviors. This suggests that the greatest benefit the skill of mindfulness could confer would be for the general population—or those classified as *Nonideators* in the present study—in augmenting coping capacity and deterring the development of suicidal thoughts and ultimately entry onto the suicidal continuum. These findings indicate that mindfulness could be one quality that could fortify a large segment of the population from advancing to acute levels of expression of distress and disorder. Given these results, a discussion of how mindfulness could be incorporated into an integrated, comprehensive suicide prevention and mental health promotion program on a college campus will be discussed below.

Interaction of Mindfulness and Distress on Suicidality

Given the role of stress and distress in contributing to the development of suicidality (Bonner & Rich, 1987; Bonner & Rich, 1988; Konick & Gutierrez, 2005; Schotte & Clum, 1982), a question generated by the present study was the potential buffering effect of mindfulness on the development of suicidal thoughts and behaviors and strength of intent as distress increased. The goal was to identify if, as distress endorsed by participants increased, those who are dispositionally higher in mindfulness

experience greater benefit of this quality, thus mitigating the impact of distress on the development of suicidality. The results for this interaction effect were not supported, at either the thoughts or behaviors threshold for suicidality, or for the strength of intent concept. As this was a cross-sectional design, the causal pathway of distress was not able to be determined, which may have a bi-directional relationship with the development of suicidal thoughts. A prospective design could determine if mindfulness provides protection of pre-existing distress that then manifests into expression of suicidal thoughts and behaviors, or if distress generated by suicidal ideation can be attenuated by increased mindfulness levels.

Lastly, there may be limitations to the measures used to identify distress and mindfulness levels in the present study. Specifically, distress was measured with only one item, which may provide limited predictive utility given the lack of reliability of a one-item measure. Further, given the space limitations in the survey the 10-item scale by Feldman and colleagues (2007) was used to measure mindfulness. This scale is a global measure of mindfulness, and does not assess for the hypothesized sub-components of the construct. It is possible that the nonjudgment and/or present moment awareness elements of mindfulness conveyed greater or lesser protection from the role of distress on suicidality development. For example, Cha and Nock (2009) found that *strategic emotional intelligence* had a moderating effect on the relationship between suicidal ideation and chidhood sexual abuse, but that this effect did not hold for the other operationalized component of emotional intelligence, *experiential intelligence*. The same mechanism may be at play for the present study with the influence of mindfulness as a

buffer for the role of distress and suicidality. Because the main effect of mindfulness was significant at the threshold of development of suicidal ideation, a more in-depth examination of the role of mindfulness as a buffering effect shows promise.

Implications for Intervention, Prevention and Mental Health Promotion

The previous sections identified the findings of the present study and discussed in turn how each of these findings fits into the broader discussion of mindfulness and the suicidal continuum. In order to advance the field with respect to development of broad intervention programs on university campuses, implications for incorporating mindfulness as a skill will be discussed in the context of levels of intervention, including prevention and health promotion.

Given the multiple etiology of the mental health problems that students encounter, many colleges and universities are expanding beyond simply offering intervention at the treatment phase of a disorder, and are developing programs that aim to elevate the mental health of the broader campus population (Davidson & Locke, 2010). This shift emanates from Rose's (1992) theorem arguing for "shifting the curve" of a disorder, since incidence of a disorder will decrease to a greater degree by improving the health of the overall population rather than solely focusing on those with elevated risk. Several suicidality and college student mental health scholars have advocated for this shift to a public health approach in the prevention of suicidality on college campuses (Drum et al., 2009; Knox, Conwell, & Caine, 2004; Schwartz, 2006b; Davidson & Locke, 2010). As a departure for this discussion, a system classifying levels of intervention presented by

Gordon (1983), and now incorporated into the Institution of Medicine's (NAS-IOM, 2009) prevention framework, will be discussed.

This classification system distinguishes *prevention*—or interventions aimed to prevent the development of a disorder and targeted toward individuals lacking motivation due to absence of distress or suffering—from *treatment* or *maintenance*, which aims interventions at resolving or preventing the recurrence of a disorder that has already arisen or distress is presently salient. The system further differentiates *health promotion*, which entails interventions designed to "enhance individuals' ability to achieve developmentally appropriate tasks (competence) and a positive sense of self-esteem, mastery, well-being, and social inclusion to strengthen their ability to cope with adversity" (NAS-IOM, 2009, p. 66). *Prevention* is further sub-divided by *universal, selective* and *indicated* levels of prevention, which identify different subgroups of the population as prevention targets. See Figure 6 for a table detailing the various levels of intervention in this classification system.

Figure 6: Classification System of Interventions

Intervention Type	**Goal**
Health Promotion	Enhance students' adaptive functioning within their environment and increase ability to achieve "developmentally appropriate tasks" (NAS-IOM, 2009)
Prevention	
-Universal	Reduce risk factors (including risk behaviors) of a disorder, prevent development of distress, and enhance protective factors of entire student population
-Selective	Prevent disorders from developing for an individual or group with elevated risk of expressing a disorder
-Indicated	Prevent disorders from developing for individuals or group with increased vulnerability or who are beginning to show signs or symptoms of the disorder manifesting, but is subclinical
Treatment	Reduce the duration, severity or recurrence of an already expressed disorder
Maintenance	Decrease disability related to disorder or prevent relapse

Note: Adapted from "Using a public health approach to address student mental health," by L. Davidson & J.H. Locke, 2010, In J. Kay & V. Schwartz (Eds.) *Mental health care in the college community*. (pp. 267-288). Wiley-Blackwell.

Drum and Denmark (2011) provide an additional typology of levels of intervention tailored to the issue of suicide prevention, aiming to create a framework wherein college campuses can identify multiple targets for prevention, both at the individual- and population-level. The authors delineate *ecological prevention, proactive prevention, early intervention,* and *treatment and crisis intervention* as further intervention categories of focus. *Ecological prevention* consists of those qualities of the environment that promote positive health and reduce distress and negative life events

from occurring on campus. An example of an intervention targeted to changing the ecological structure of the campus could be the goal of increasing social connectedness or reducing competitiveness among students. Most mirroring the health promotion and universal prevention intervention sub-types, interventions at this level are the responsibility of the university administration to implement and maintain, and often require substantial campus resources and buy-in of campus stakeholders. An intervention endeavoring to foster greater mindfulness among its student body might consist of a campaign targeting nonjudgmental acceptance and awareness of stress as it rises, rather than the classic avoidant strategies so often utilized on campuses (e.g., drinking, video games, web surfing). A cultural shift in this direction would require sustained persistence on the part of administration, as modifying norms such as these are often gradual (Perkins & Craig, 2006).

Drum and Denmark (2011) then highlight *proactive prevention,* which is aimed at preventing the intersection of diathesis and stress on campus, working to augment the protective strengths and coping resources of the population to ensure resilience when stress inevitably escalates. Mindfulness, with its protective qualities in the prevention of suicidal thoughts identified in the present study, could be implemented as one module of a broader coping skills course, perhaps implemented within a Freshman Interest Group (FIGs) whereby all first-year students are enrolled and required to complete courses meant to foster their study and stress management skills to aid in their success while attending school. These courses are similar to Gardner's (Upcraft & Gardner, 1989) now

famous University 101 seminar series, which aid in the transition of first-year students attending college and aim to foster students' success.

An intervention of this format would qualify for recommendations made by Drum and Denmark (2011) regarding the unique nature of college student populations. The authors suggest that, because college students are a membership population experiencing a high refresh rate each year as matriculating students graduate and new students enter, interventions at this level must be "self-renewing" and institutionalized (Drum & Denmark, 2011). Further, because this form of intervention would target the broader population who may not be currently experiencing impaired coping, the authors also recommend attending to the attentional capacity of the population served and providing interventions to maximize exposure through multiple venues and across varying formats. Given the limited attentional capacity of this population, dosing levels should be considered at this phase of the intervention. While more research is warranted, it is possible that a very brief intervention could have positive impact, as some research has found positive outcomes following mindfulness training as brief as 12- to 15-minutes (Alberts & Thewissen, 2011; Arch & Craske, 2006).

Early intervention, which Drum and Denmark (2011) depict as exiting the prevention realm and entering the treatment domain of intervention, is characterized by focusing on an individual who is at elevated risk but may be currently asymptomatic or endorsing non-specific challenges with stress. As such, interventions in this domain are applied to specific individuals and require a greater commitment on the part of the participant. An example of this could be the Stress Management psychoeducational

workshop offered by the Counseling and Mental Health Center at the University of Texas at Austin (J. Bost, personal communication, March 19, 2011). This program currently incorporates relaxation exercises in the 45-minute workshop, training students in diaphragmatic breathing and imagery exercises, which aim to slow down the individual's autonomic response system and generate a relaxation response. Mindfulness, with its added component of nonjudgmental awareness of present moment experiences, could be incorporated into a psychoeducational workshop similar to this one, providing the benefits conferred by a mindful stance. Specifically, mindfulness could halt the process of "stress reactivity" that occurs when the physiological and psychological system is exposed to chronic stress (Kabat-Zinn, 1990), providing space for students to choose an alternative response to the stressor. Incorporating mindfulness in an intervention program aimed at a group considered at higher risk but falling short of expressing suicidality could prevent movement onto the suicidal continuum as stress levels increase.

Drum and Denmark (2011) then explicate the *treatment* and *crisis* intervention phases, which occur when an individual's coping resources have become overwhelmed and at this phase he or she may be expressing suicidal thoughts or behaviors. It now becomes important to shift to targeted interventions aimed at reducing the duration of the suicidal crisis and returning the student to a pre-suicidal state. The findings from the current study, which found mindfulness to be protective at the threshold of developing suicidal thoughts but did not hold an association at the point at which students moved from the thoughts to the behaviors threshold, suggest that mindfulness interventions may not be appropriate for this population and phase of intervention.

Viewing mindfulness as a supplement to prevention and early intervention in this way requires a paradigm shift on college campuses. As referenced earlier, in order to understand the benefit of taking a population or public health approach in preventing suicide, campus stakeholders must understand the extent to which suicidality—in its myriad forms of expression—is a continuum, and the goal of prevention is to prevent fewer individuals, who all experience stress to some degree or another, from entering onto that continuum. Davidson and Locke (2010) note that, "a comprehensive, multi-component effort to reduce…risk factors may produce a decline in the number of students requiring intensive clinical services over time" (p. 268). This requires stakeholders to see the forest for the trees in developing prevention programs, as population-focused programs often require more time and resources to implement and it is often challenging to unequivocally tie outcomes to the effectiveness of the interventions utilized (Royse, Thyer, & Padgett, 2010). However, interventions such as the ones proposed here can be presented by non-clinical staff or faculty, and as such over time could defray costs at the treatment intervention level by reducing the number of full-time clinical staff required at counseling centers on campus.

If uncertain about the cost-benefit of implementing health promotion and prevention interventions, administrators and campus stakeholders might consider the role adaptive coping and a healthy, facilitative environment plays in academic success and retention (Barile et al., 2012; Boyd et al., 1996; Clark & Cundiff, 2011; Webber & Ehrenberg, 2010). College has become an increasingly competitive environment, with expanding academic stress and rigor required at all levels of education. Couple this with a

financial climate in which students and their families are considering the price tag and subsequent value of attending higher education, and the argument for retaining students and aiding in their success quickly becomes cogent. Since deaths by suicide are relatively infrequent (Schwartz, 2006a; Schwartz & Whitaker, 1990; Silverman et al., 1997), campus administrators may not view suicide prevention as fitting within the overarching mission of the university. However, if stakeholders can understand that by preventing the associated distress that accompanies suicidality it will benefit a much larger segment of the population, this can aid in the overall retention and persistence of a university's student body. As Drum and Denmark (2011) so convincingly argue,

> Although universities typically do not view mental health promotion as their primary mission, they often directly state or indirectly infer that their mission involves transforming students' lives and investing resources in activities and services that promote psychological wellbeing. It is, therefore, important when establishing collaborative partnerships to emphasize the direct relevance of reducing suicidality among students to the institutional mission. (p. 261)

In this way, college campuses may benefit from orienting to a public health perspective in considering the mental health needs of their students.

A caveat is in order wherein a university attempting to implement programming that has succeeded on another campus may find themselves disappointed. Scholars recommend that campuses tailor prevention programming to the unique characteristics of their environment, attending to those cultural factors that will influence whether implementation of particular programming will take hold and provide the greatest impact

(Davidson & Locke, 2010; Drum & Denmark, 2011). While findings from the current study suggest that increasing students' dispositional mindfulness levels has the potential to strengthen students' resilience in the face of distress, programming implemented across mental health, prevention or treatment channels should consider the receptivity of the audience and more broadly the cultural context within which said audience is located.

Strengths, Limitations, and Future Directions

This study addresses limitations of prior research examining the intersection of mindfulness and suicidality. In particular, this research addresses calls within the suicidality literature to more closely examine those protective factors that bolster the large majority of individuals who, confronting stress or negative life events, never consider suicide or develop a psychological disorder (Cha & Nock, 2009; Gould et al., 2003; Rutter, Freedenthal, & Osman, 2008).

Further, mindfulness-training has received attention in the psychotherapy literature as a promising component of treatment to reduce suicidality for specific sub-populations (Koons et al., 2001), and an 8-week randomized controlled trial is currently exploring the unique contribution of mindfulness training in reducing depression relapse and suicidal ideation and attempts in a depression vulnerable population (Williams et al., 2010). However, no research to date has explored among a broad population of college students the impact of individual differences in mindfulness on the development and progression of suicidal thoughts and behaviors. Teasing apart precisely where along the continuum of suicidality mindfulness conveys protection can provide guiding principles

that campuses and counseling centers can use to develop prevention and health promotion programs to strengthen this protective process and reduce distress and suicidality across the entire population.

As with all research, several important limitations of the study should be noted. First, the measures employed are all self-report measures, which exposes the data to several sources of bias. By relying on the respondent to accurately report his or her experience with the various domains that are being examined, results are vulnerable to distortion of these responses, either intentionally or unintentionally. Respondents may have difficulty accurately recalling their experiences with suicidal thoughts and behaviors during a recent stressor. Further, participants may deduce the hypotheses of the researchers and alter their responses to make themselves appear either more distressed than they truly are, or—due to a desire to appear socially desirable—less distressed than they truly are. However, the benefit of understanding participants' own perceptions of the studied constructs—the phenomenological perspective of these variables—provides support for utilizing self-report measures in this study. Further, the items used to measure the constructs of mindfulness, distress and suicidality are open to bias as well. Future research could utilize more substantial measures of mindfulness, such as the Five Facet Mindfulness Questionnaire (Baer et al., 2008), which purports to measure sub-components of mindfulness that could convey differential protection in the development of suicidality. A future direction of inquiry could be to examine precisely what protective mechanisms—such as frustration tolerance, emotion regulation, and coping abilities (Davidson & Locke, 2010)—mindfulness conveys to the general population as a more

adaptive way of coping with life stressors and further what specific elements of mindfulness, be it the present moment awareness or the nonjudgmental orientation toward experience, that provides the greatest benefit.

Using a student population from traditional colleges and universities may hinder generalizability as well, although by sampling from a non-clinical population a strength of the present study was to broaden beyond the suicidality continuum and look at the entire spectrum of distress. However, these results may not generalize to other age groups, individuals attending nontraditional institutions such as online or community colleges, or those not enrolled in school. Thus, care should be taken in drawing conclusions of the protective benefit of mindfulness on suicidality in groups outside traditional universities and colleges. However, for the purpose of this study, the student population is the group of interest for intervening with, as this population is quite amenable to intervention given that students are a somewhat captive audience and that college campuses provide a unique interventional environment for population-based prevention efforts. Further, while the demographics of the sample used were comparable to other large-scale, national surveys of colleges and universities (ACHA-NCHA, 2011; Drum et al., 2009), Caucasian students may have been overrepresented as compared to racial and ethnic minority students, and as such future research efforts should attempt to recruit a diverse sample to reflect the reality of diversity on college campuses.

A voluntary survey may lack generalizability due to the potential for self-selection bias. This suggests that individuals who volunteer to participate in the survey may be systematically different in some way from the population at large. Additionally,

inferences should not be made about how mindfulness operates for specific individuals experiencing suicidality or distress, as the data generated here is aggregated. This would typify an "ecological fallacy" (McIntosh, 2002), which assumes that individual members of a group have the average features of the larger group. In this way, a clinician should not assume that a client high in dispositional mindfulness is thereby at little-to-no risk for developing or already possessing some form of suicidal ideation. Thus, results from this study should be used to inform public health interventions or to add to our existing knowledge about what contributes to the protection of individuals at high risk for developing suicidal ideation.

Further, certain limitations occur when conducting a correlational study, and significant results discovered in this study cannot on their own imply causation. Future research could be strengthened by a prospective examination of how these variables relate to one another. Also, suicidal ideation is a multi-determined phenomenon; therefore, any number of factors could influence the materialization of suicidality among students and the variables included in the present study were not an exhaustive examination of all variables contributing to suicidality. Presence of prior attempt (Brent et al., 1999; Coryell & Young, 2005; Joiner et al., 2005; Limosin, Loze, Philippe, Casadebaig, & Rouillon, 2007; Maris, 1992; Maser et al., 2002; Owens, Booth, Briscoe, Lawrence, & Lloyd, 2003; Schwartz, 2006a; Suominen et al., 2004) and distress (Bonner & Rich, 1987; Bonner & Rich, 1988; Hirsch & Ellis, 1996; Konick & Gutierrez, 2005; Schotte & Clum, 1982) were examined due to their established connection with developing suicidal thoughts and behaviors, but additional factors known to be associated

with suicidality, such as self-criticism (O'Connor, 2007), ruminative style (Chan, Miranda, & Surrence, 2009), self-esteem (Bhar, Ghahramanlou-Holloway, Gregory Brown, & Beck, 2008; Vella, Persic, & Lester, 1996), presence of hopelessness and depressive symptoms (Beck, Brown, Berchick, Stewart, & Steer, 1990; Davila & Daley, 2000; Konick & Gutierrez, 2005; Nock et al., 2009; Weber, Metha, & Nelsen, 1997; Weishaar & Beck, 1992; Westefeld & Furr, 1987), and social isolation/subjective sense of isolation (Joiner & Rudd, 1996; Rubenstein, Heeren, Housman, & Rubin, 1989; Stravynski & Boyer, 2001), may also influence and be influenced by the ameliorative effects mindfulness may have on development of suicidality. Thus, results from the study should be considered exploratory and tentative and signify a need for additional research to provide further empirical support for the connections that emerged here.

In sum, this study is exploratory in nature, and while elements are based on established theory, the associations proposed in this investigation have never been examined before. Thus, results from this study should continue to be refined and tested with diverse populations to provide further support for the connection between the protective benefit of mindfulness and theories of the development of distress and suicidality in the population at large. The various manifestations of suicidality are not uncommon on college campuses (Drum et al., 2009), but perhaps more importantly substantial numbers of college students endorse experiencing severe enough stress, depression and anxiety to impact their academic functioning (ACHA-NCHA, 2011). Because colleges and universities are educating those who will become part of the workforce of the future, developing interventions to augment coping abilities and reduce

the stress and disorder experienced on college campuses has the potential increase our collective effectiveness as a nation. Given the interventional qualities of college campuses (Davidson & Locke, 2010; Drum et al., 2009; Drum & Denmark, 2011)—including the resources and infrastructure to enact population-based interventions—these settings provide a unique opportunity to implement and evaluate efforts to increase protective mechanisms and reduce distress both across the broader campus environment and within individual students.

Appendices

Appendix A: Survey Invitation, Consent Forms, and Local Resources Page

Note: This information was customized with contact information for the campus counseling center and each institution's local representative. The random sample received an e-mail addressed from their local campus counseling center or local campus sponsor that was customized with the institution's colors and logo.

Initial Invitation

FROM*: Local Representative* (*rep@ouremail.edu*)
REPLY-TO: *Local Representative* (*rep@ouremail.edu)*
SUBJECT: [SCHOOL NAME] Invites You to Participate in a National Study

Dear [STUDENT FIRST NAME],

You have been randomly selected to represent [SCHOOL NAME] in a national study of how students cope with stressful experiences. The results of this *anonymous* survey are vital because they will help [SCHOOL NAME] learn how to better support you, your friends, and your fellow [GRADUATE (if graduate student)] students.

Chances are that either you or someone you care about has struggled with very stressful experiences. Some students feel so overwhelmed that they may even consider hurting themselves. Even if you have not personally experienced this type of situation, it is likely that someone close to you has. Your participation is essential and will contribute valuable insight into this extremely important topic.

Participation in this survey will qualify you for a random drawing for one of 100 gift certificates to Amazon.com (value = $50 each). Although your responses to the survey are anonymous – that is, there will be no way to link your responses back to your name or any other personally identifiable information about you – your participation in the survey will make you eligible for the drawing.

You may access the study online or learn more about it by following this link:

https://Study link.

If you have questions about the survey or have any difficulty accessing the survey online, please e-mail [LOCAL REPRESENTATIVE EMAIL] or call me at [LOCAL

REPRESENTATIVE PHONE]. The study is sponsored and supported by the [DEPARTMENT/COUNSELING CENTER] at [SCHOOL NAME], and is being conducted by The University of Texas at Austin.

Because we are only inviting a small, random sample of our students to complete the survey, your responses are critical to make the results for our campus as accurate and meaningful as possible.

Thank you for your help with this important project.

Sincerely,

[Campus Representative signature line]

Cover Letter for Internet Research

You are invited to participate in a survey, entitled "Undergraduate and Graduate Student Coping with Stressful Experiences." The study is sponsored and supported by the [NAME OF DEPARTMENT/COUNSELING CENTER] at [SCHOOL NAME], and you can contact [COUNSELING CENTER DIRECTOR/CONTACT PERSON] at [EMAIL] or [PHONE] with any questions about this survey. You can also contact the National Director of this research project, Chris Brownson, Ph.D., Director of the Counseling & Mental Health Center at The University of Texas at Austin, at cbrownson@austin.utexas.edu or 512-475-6990, or by mail at 1 University Station, A3500, Austin, Texas 78712.

The purpose of this study is to examine ways that undergraduate and graduate students respond to stressful experiences. Your participation in the survey will contribute to a better understanding of how colleges and universities can best support students during stressful times, particularly when students feel unable to cope and may have thoughts about hurting or killing themselves. Even if you have never had suicidal thoughts, chances are that some of your friends and classmates have had such thoughts. This survey includes questions about this important topic, and will ask about experiences you may have had with suicidal thoughts or behaviors. We estimate that it will take about 20 minutes of your time to complete the questionnaire. You are free to contact the investigator at the above address and phone number to discuss the survey.

This survey is entirely anonymous. Your actual survey responses are not linked to your name, and will never be associated with you or your personally identifiable information. If you consent to participate by clicking on the appropriate button at the bottom of this page, your survey will be assigned a random number to serve as the only identifier for our records. This random number will have no relation and no link to your name or any

personally identifiable information about you. As a result, your responses cannot be linked to your identity, either during or after the survey itself.

Risks to participants are considered minimal. However, the survey may ask you to recall events that you are uncomfortable thinking about. For example, the survey includes questions about past stressful experiences and other difficult topics such as suicidal thoughts and attempts. If you become upset while answering the survey questions, you may wish to take a break the survey, or you may exit the survey permanently by clicking on the link at the bottom of each page that reads "Click here to exit the Survey." You may also call [NAME OF COUNSELING CENTER] at [XXX-XXXX] to discuss any distressing or discomforting feelings. You can also follow the link on the top of each page that will provide more information about local counseling resources. If you wish to discuss the information above or any other risks you may experience, you may contact the research study's local representative, [LOCAL REPRESENTATIVE], at [LOCALCONTACT@campus.edu] or [XXX-XXXX], or contact the Principal Investigator, Chris Brownson, PhD, at cbrownson@mail.utexas.edu or 512-475-6990.

There will be no costs for participating, nor will you benefit from participating. Your participation in this survey is entirely voluntary. You may decline to answer any question and you have the right to withdraw from the study at any time without penalty. If you wish to withdraw from the study, you can do so by using the links provided within the survey, or you may contact the investigator listed above.

If you choose to participate in the survey, you will have the option to be entered into a random drawing to win one of 100 gift cards to Amazon.com in the amount of $50 each. Depending on how many of your peers choose to participate in the survey, the chances of winning one of these gift cards are estimated to be between 1 in 250 and 1 in 350. The record of your participation in the survey is stored entirely separately from your responses, which will always be anonymous. If you choose to enter the drawing and you are selected to win the prize, you will receive an email informing you that you have won and providing you with the number for the electronic gift card.

If you have any questions or would like us to update your email address, please call Chris Brownson, Ph.D., Director of the Counseling & Mental Health Center at The University of Texas at Austin, at 512-475-6990, or send an email to cbrownson@austin.utexas.edu.

This study has been reviewed and approved by The University of Texas at Austin Institutional Review Board. If you would like to obtain information about the research study, have questions, concerns, complaints or wish to discuss problems about a research study with someone unaffiliated with the study, please contact the IRB Office at (512) 471-8871 or Jody Jensen, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects at (512) 232-2685. Anonymity, if desired, will be protected to the extent possible. As an alternative method of contact, an

email may be sent to orsc@uts.cc.utexas.edu or a letter sent to IRB Administrator, P.O. Box 7426, Mail Code A 3200, Austin, TX 78713.

IRB Approval Number: **2010-07-0052**

If you agree to participate please click the button that says "Participate in the Survey" on the right side of the screen below. Otherwise, please click on the button that says "I do not want to participate" on the left side of the screen below.

Thank you very much for your time and consideration of this valuable study.

Logout Page and Referral to Local Mental Health Resources

Thank you for your participation!

[Note: The information below will also be displayed if students click on the information link within the survey, refuse to participate, or exit prematurely from the survey. This document is a template using the example of the University of Texas at Austin. The information for our campus will follow the same template but will provide different details].

You may wish to print out the information on this page for future reference.

This study is supported by the [COUNSELING CENTER NAME]. The [COUNSELING CENTER NAME] is available to you should you have any reactions to or questions about your responses to the survey items, or if you would like to talk about your current or past stressful experiences. Your contact with [COUNSELING CENTER NAME] is confidential and is not part of your academic record. We can be reached at [XXX-XXXX] during regular business hours, and for after hours assistance you can contact [XXX-XXXX].

You may also wish to use resources outside of your campus. Useful resources include:

[List of customized local resources]

Example:

Psychiatric Emergency Services:	454-3521
Seton Shoal Creek Hospital:	324-2000
Austin/Travis County Hotline for Help	471-4357
EMS/Police/Fire:	911

National Suicide Prevention Lifeline: **1-800-273-TALK (8255)**

Call the free, 24-hour hotline available to anyone in suicidal crisis or emotional distress. Your call will be routed to the nearest crisis center to you.

- Call for yourself or someone you care about
- Free and confidential
- A network of more than 140 crisis centers nationwide
- Available 24/7

The following is some information about [COUNSELING CENTER NAME]:

[customized information] Telephone Counseling (471-CALL) – available 24 hours a day, every day of the year, including holidays. The counselors at the service are specifically trained to deal with a variety of concerns relevant to university students. It is not uncommon for students to be struggling with issues such as anxiety, depression,

family or relationship difficulties, academic pressures, or worries about the future. We will listen and talk with you about your concerns, explore feelings, help you make connections, discuss options and strategies, and, if needed or requested, refer you to appropriate counseling and mental health services on campus or in the community. We are also available for consultation on how to best help a friend or acquaintance who might be having a problem.

Individual Counseling – The Counseling Center has trained counselors, including psychologists, social workers, and psychiatrists available for one-on-one counseling sessions. Call 471-3515 to make an appointment for an initial consultation. At this Initial Consultation, which lasts about an hour, a counselor will talk with you to help you decide how best to deal with your concerns and what are the most appropriate services for your needs. Typically referrals will be made to one or more services provided by the Center, including individual counseling, group counseling, or our mind/body lab. In some cases, University and/or community agencies will be identified for outside referrals. For more information, see http://www.utexas.edu/student/cmhc.

Appendix B: Survey Codebook

Undergraduate and Graduate Student Coping with Stressful Experiences
Final Revision—May 2011

Conventions
Question Numbering
Q2, Q3_1, Q3_2…
Each distinct question is numbered sequentially in presentation order. Some questions invite responses on several points; these various points share the same question number, but have a sequential letter appended to differentiate them.

Open Text Numbering
Items with free text will follow a numbering convention in which the letter 'u' follows each open text item (e.g., Q03_8u)

Survey Content
"Please provide your age in years:"
The text of each question as well as all potential responses are included in this codebook. Anything marked with quotes is taken verbatim from the survey.

Response Options
1 = "Yes" The response options for each question are indicated on the right side of each row. In the case of questions with multiple data points, the response options presented apply to each point. When there are response options nested within categories within an item (e.g., Q41), the numbering convention will reflect this nesting characteristic (e.g., Q41_1_1 indicates that participant endorsed turning to an adviser about academic problems).

Missing Values
For the majority of questions, a missing value is indicated by a blank; this may be due to either the respondent skipping the question or a skip pattern. The one exception is multiple choice questions, in which a '0' indicates a particular option has not been selected.

Skip Patterns
[Q04 = 1]
Simple skip patterns, in which the availability of one or two questions is dependent on another close question, are indicated by an expression in brackets. Larger skip patterns, in which entire sections of questions are skipped, are indicated by separate rows labeled "Skip:" with explanations of the pattern.

Response ('cid')

A fully anonymous number that uniquely identifies the response. (string; always present)

School
A unique number which identifies the school of the respondent. (integer number; always present)

Q01 "Please provide your age in years:"
(dropdown menu [18 to 95]; blank = no response)

Q02 "How do you identify?" blank = no response or skipped
1 = "Female"
2 = "Male"
3 = "Transgender"

Q03 "With the understanding that these categories might be limiting, how do you typically describe yourself? (Select all that apply)" blank = no response or skipped
1 = TRUE; 2 = FALSE

Q03_1= "African American, of African descent, African, of Caribbean descent, or Black"
Q03_2 = "Asian or Asian American (e.g., Chinese, Japanese, Korean)"
Q03_3 = "Caucasian, White, of European descent, or European (including Spanish)"
Q03_4 = "Hispanic, Latino or Latina (e.g., Cuban American, Mexican American, Puerto Rican"
Q03_5 = "Middle Eastern or East Indian (e.g., Pakistani, Iranian, Egyptian)"
Q03_6 = "Native American (e.g., Dakota, Cherokee) or Alaskan Native"
Q03_7 = "Native Hawaiian or other Pacific Islander (e.g., Samoan, Papuan, Tahitian)"
Q03_8 = Other, please specify:"

Q03_8u (no prompt; provided for "Other, please specify:" response to Q03_8)
[Q03_8 = 1]
(text; blank = no response or skipped)

Q04 "Are you an international student?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q05 "What is your country of origin?"
[Q04 = 1]
(text; blank = no response or skipped)

Q06 "What is your grade classification?" blank = no response or skipped
1 = "Freshman"

2 = “Sophomore”
3 = “Junior”
4 = “Senior”
5 = “Medical Student”
6 = “Law Student”
7 = “Graduate Student or Other Professional Student”
8 = “Non-degree-seeking Student”

Q07 “How would you describe your sexual orientation?” blank = no response or skipped
1 = “Bisexual”
2 = “Gay or Lesbian”
3 = “Heterosexual”
4 = “Questioning”
5 = “Other, please specify:”

Q07_5u (no prompt; provided for “Other, please specify:” response to Q07_5)
[Q07_5 = 1] (text; blank = no response or skipped)

Q08 “What is your current relationship status? (Select all that apply)” blank = no response or skipped
Q08_1 = “I am single and not currently dating”
Q08_2 = “I am casually dating”
Q08_3 = “I am in a steady dating relationship”
Q08_4 = “I am partnered or married”
Q08_5 = “I am separated or divorced”
Q08_6 = “I am widowed”

Q09 “What is your living situation? (Select all that apply)” blank = no response or skipped
Q09_1 = “By myself”
Q09_2 = “With parent(s) and / or family of origin”
Q09_3 = “With roommate(s)”
Q09_4 = “With romantic partner or spouse”
Q09_5 = “With children or dependents”
Q09_6 = “With pet(s)”
Q09_7 = “Sorority or fraternity house”
Q09_8 = “College or University Housing”

Q10 “What is your religious or spiritual preference? (Select all that apply)” blank = no response or skipped
1 = TRUE; 2 = FALSE

Q10_1 = “None”

Q10_2 = “Agnostic”
Q10_3 = “Atheist”
Q10_4 = “Buddhist”
Q10_5 = “Christian”
    Q10_6 = “Catholic” [Q10_5 = 1]
    Q10_7 = “LDS” [Q10_5 = 1]
    Q10_8 = “Protestant” [Q10_5 = 1]
Q10_9 = “Hindu”
Q10_10 = “Jewish”
Q10_11 = “Muslim”
Q10_12 = “Native American Religion”
Q10_13 = “Unitarian or Universalist”
Q10_14 = “Other, please specify:”

Q10_14u (no prompt; provided for “Other, please specify:” response to Q10_14) [Q10_14 = 1] (text; blank = no response or skipped)

Q11 “How important are your religious or spiritual beliefs to your personal identity?” blank = no response or skipped
1 = “Not at all important”
2
3 = “Moderately important”
4
5 = “Very important”

Q12 “To what degree have you questioned or changed your religious or spiritual beliefs over the past year?” blank = no response or skipped
1 = “Significantly less sure of my beliefs”
2
3 = “No change in my beliefs”
4
5 = “Significantly more sure of my beliefs”

Q13 “What is the highest level of education completed by your parent(s) or significant caregiver(s)?” blank = no response or skipped
1 = “Did not complete high school”
2 = “Finished high school or high school equivalent”
3 = “Some college”
4 = “Associate’s degree or technical training certificate”
5 = “Finished college”
6 = “Some graduate or professional school after college”
7 = “Finished graduate or professional school (e.g., masters or doctoral degree)
8 = “Not sure”

Q14 "From which of the following have you ever received counseling or mental health services? (Select all that apply)" blank = no response or skipped
1 = TRUE; 2 = FALSE

Q14_1 = "Counselor, therapist, psychologist, and / or social worker"
Q14_2 = "Psychiatrist"
Q14_3 = "Clergy"
Q14_4 = "Other medical provider (e.g., physician, nurse practitioner)"
Q14_5 = "Alternative medical provider (e.g., acupuncturist, naturopathic doctor, massage therapist)"
Q14_6 = "Other, please specify:"
Q14_7 = "I have never received counseling or mental health services

Q14_6u (no prompt; provided for "Other, please specify:" response to Q14_6)
[Q14_6 = 1] (text; blank = no response or skipped)

Q15 "Have you ever received counseling or psychiatric services from your college or university counseling center?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q16 "Have you ever taken medication for mental health concerns?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q17 "Have you ever been hospitalized for mental health concerns?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q18 "Have you served in the military?" blank = no response or skipped
1 = "Yes"
2 = "No"
Skip: respondents who answered "No" to Q18 skip Q23 – Q26.

Section Intro "In this next section of the survey, we are interested in learning about challenging or upsetting experiences you may have had during your lifetime."

Q19 "Overall, how stable was your family environment while growing up? (e.g., frequent moves, financial stresses, excessive fighting)?" blank = no response or skipped
1 = "Not stable at all"

2
3 = “Moderately stable”
4
5 = “Very stable”

Q20 “Please characterize your lifetime medical history (e.g., serious illnesses, hospitalizations, chronic medical conditions).” blank = no response or skipped
1 = “No medical problems”
2
3 = “Moderate medical problems”
4
5 = “Substantial medical problems”

Q21 “Please characterize your lifetime history of mental health concerns (e.g., depression, anxiety).” blank = no response or skipped
1 = “No mental health concerns”
2
3 = “Moderate mental health concerns”
4
5 = “Substantial mental health concerns”

Q22 “In your lifetime, have you been a victim of abuse or violence (e.g., sexual abuse, physical abuse, emotional abuse, assault)?” blank = no response or skipped
1 = “Yes”
2 = “No”

Q23 “Did you ever serve in a war zone?” blank = no response or skipped
[Q18 = 1]
1 = “Yes”
2 = “No”

Q24 “Have you been deployed more than once?” blank = no response or skipped
[Q23 = 1]
1 = “Yes”
2 = “No”

Q25 “Where were you deployed? (Select all that apply) blank = no response or skipped
[Q23 = 1]
1 = TRUE; 2 = FALSE

Q25_1 = “Afghanistan”
Q25_2 = “Iraq”
Q25_3 = “Other, please specify:”

Q25_3u (no prompt; provided for "Other, please specify:" response to Q25_3)
[Q25_3 = 1] (text; blank = no response or skipped)

Q26 "To what extent were you exposed to traumatic events while in military service?"
[Q18 = 1] blank = no response or skipped
1 = "No trauma"
2
3 = "Moderate trauma"
4
5 = "Substantial trauma"

Q27 "Have you ever seriously considered attempting suicide at some point in your life?"
[Q26 = 1] blank = no response or skipped
1 = "Yes"
2 = "No"

Q28 "When did you first seriously consider attempting suicide?"
[Q27 = 1] blank = no response or skipped
1 = "Before or while in middle school"
2 = "While in high school"
3 = "After high school but before college"
4 = "While in college"
5 = "After college and before graduate school"
6 = "While in graduate school"
7 = "Other, please specify:"

Q28_7u (no prompt; provided for "Other, please specify:" response to Q28_7)
[Q28_7 = 1] (text; blank = no response or skipped)

Q29 "During the past 12 months, have you seriously considered attempting suicide?"
blank = no response of skipped
1 = "Yes"
2 = "No"

Q30 "How many times in your life have you attempted suicide?" blank = no response or skipped
0 = "0"
1 = "1"
2 = "2"
3 = "3"
4 = "4"
5 = "5 or more"

Q30a "For how many of your attempts did you receive emergency medical attention?"
[Q30 = 1, 2, 3, 4, or 5 or more]
(pop out for Q30; blank = no response or skipped)
0 = "none"
1 = "1"
2 = "2"
3 = "3"
4 = "4"
5 = "5 or more"

Q31 "How many of those attempts occurred in the past 12 months?"
[Q30 = 1, 2, 3, 4, or 5 or more]
0 = "0"
1 = "1"
2 = "2"
3 = "3"
4 = "4"
5 = "5 or more"

Q31a "For how many of your attempts did you receive emergency medical attention?"
blank = no response or skipped
[Q31 = 1, 2, 3, 4, or 5 or more]
(pop out for Q31; blank = no response or skipped)
0 = "none"
1 = "1"
2 = "2"
3 = "3"
4 = "4"
5 = "5 or more"

Q32 "During your lifetime, how would you describe the relative severity of your suicide attempts?" blank = no response or skipped
[Q30 = 2, 3, 4, or 5 or more]
1 = "All of the attempts were equally life-threatening"
2 = "The more I attempted the more life-threatening they became"
3 = "The more I attempted the less life-threatening they became"
4 = "Some attempts were more life-threatening than others, but there was no real pattern"

Section Intro "People generally develop consistent ways of viewing themselves and others throughout their lives. When answering these questions, please consider how you generally think and feel."

Q33 "When approaching the challenges of daily life:"

Q33a "How critical are you of yourself?"
blank = no response or skipped
1 = "Not at all critical"
2
3 = "Moderately critical"
4
5 = "Very critical"

Q33b "How capable are you of managing your daily challenges?"
blank = no response or skipped
1 = "Not at all capable"
2
3 = "Moderately capable"
4
5 = "Very capable"

Q33c "How motivated are you to manage your daily challenges?"
blank = no response or skipped
1 = "Not at all motivated"
2
3 = "Moderately motivated"
4
5 = "Very motivated"

Q33d "How meaningful do you view your life to be?"
blank = no response or skipped
1 = "Not at all meaningful"
2
3 = "Moderately meaningful"
4
5 = "Very meaningful"

Q33e "To what extent are you able to understand what must be done to face the challenges of daily life?"
blank = no response or skipped
1 = "Not at all able to understand"
2
3 = "Moderately able to understand"
4
5 = "Very able to understand"

Q34 "People have a variety of ways of relating to their thoughts and feelings. Please rate how much each of these ways generally applies to you:" blank = no response or skipped
1 = "Rarely or not at all"
2 = "Sometimes"
3 = "Often"
4 = "Almost always"

Q34_1 = "It is easy for me to concentrate on what I am doing."
Q34_2 = "I can tolerate emotional pain."
Q34_3 = "I can accept things I cannot change."
Q34_4 = "I can usually describe how I feel at the moment in considerable detail."
Q34_5 = "I am easily distracted."
Q34_6 = "It's easy for me to keep track of my thoughts and feelings."
Q34_7 = "I try to notice my thoughts without judging them."
Q34_8 = "I am able to accept the thoughts and feelings I have."
Q34_9 = "I am able to focus on the present moment."
Q34_10 = "I am able to pay close attention to one thing for a long period of time."

Q35 "When approaching the challenges of daily life:"

Q35a "How much do you feel you are a burden on others?"
blank = no response or skipped
1 = "Not at all a burden"
2
3 = "Moderately a burden"
4
5 = "Very much a burden"

Q35b "How understood by others do you feel?"
blank = no response or skipped
1 = "Not at all understood"
2
3 = "Moderately understood"
4
5 = "Very much understood"

Q35c "How cared for by others do you feel?"
blank = no response or skipped
1 = "Not at all cared for"
2
3 = "Moderately cared for"
4
5 = "Very much cared for"

Q35d "How much do you feel that you can count on others?"
blank = no response or skipped
1 = "Not at all able to count on others"
2
3 = "Moderately able to count on others"
4
5 = "Very much able to count on others"

Q35e "How comfortable do you feel making new connections with others?"
blank = no response or skipped
1 = "Not at all comfortable"
2
3 = "Moderately comfortable"
4
5 = "Very comfortable"

Section Intro "In this section we would like to better understand the activities and connections that are important in your life."

Q36_#yn "Of the following activities, in which do you actively participate as either a member or in a leadership role?" blank = no response or skipped
1 = "Member"
2 = "Leadership"
3 = "Not involved"

Q36_1yn = "Academic or Professional Organizations"
Q36_2yn = "Arts organizations (e.g. music, drama, dance, fine arts)"
Q36_3yn = "Fraternity or sorority"
Q36_4yn = "Informal group with shared interests (e.g. exercise, entertainment, food, drink)"
Q36_5yn = "International, ethnic or cultural organizations"
Q36_6yn = "Intramural or club sports"
Q36_7yn = "Paid employment"
Q36_8yn = "Political, social-action or student government organizations"
Q36_9yn = "Religious organizations"
Q36_10yn = "Service or social organizations (other than fraternity or sorority)"
Q36_11yn = "Varsity athletic teams"

Q36_1 "How important is this activity or group as a social network in your life?
[Q36_(1-11)yn = 1 or 2]
(pop out for Q36_#yn; blank = no response or skipped)

1 = “Not at all important”
2
3 = “Moderately important”
4
5 = “Very important”

Q36_1 = “Academic or Professional Organizations”
Q36_2 = “Arts organizations (e.g. music, drama, dance, fine arts)”
Q36_3 = “Fraternity or sorority”
Q36_4 = “Informal group with shared interests (e.g. exercise, entertainment, food, drink)”
Q36_5 = “International, ethnic or cultural organizations”
Q36_6 = “Intramural or club sports”
Q36_7 = “Paid employment”
Q36_8 = “Political, social-action or student government organizations”
Q36_9 = “Religious organizations”
Q36_10 = “Service or social organizations (other than fraternity or sorority)”
Q36_11 = “Varsity athletic teams”

Q37 “On average, how much time per week do you spend (collectively) participating in these organization(s)?” blank = no response or skipped
[Q36_(1-11)yn = 1 or 2]
1 = “5 or less hrs/week”
2 = “6 - 10 hrs/week”
3 = “11 - 15 hrs /week”
4 = “16 - 20 hrs/week”
5 = “21 – 25 hrs/week”
6 = “26 – 30 hrs/week”
7 = “More than 30 hrs/week”

Q38 “How important is the following in staying connected with others?” blank = no response or skipped
1 = “Not at all important”
2
3 = “Moderately important”
4
5 = “Very important”

1. “Blogging”
2. “Email”
3. “In person contact”
4. “Gaming connections”
5. “Phone”

6. “Social networking (e.g., Facebook, Twitter)”
7. “Text message”
8. “Videochat”
9. “Other, please specify:” (text)

Q38_9u (no prompt; provided for “Other, please specify:” response to Q38_9)
[Q38_9 = 1] (text; blank = no response or skipped)

Q39 “Do you consider your relationship with people you spend most of your time with to be:” blank = no response or skipped
1 = “Not at all close”
2
3 = “Moderately close”
4
5 = “Very close”

Q40 “On average, how close is your relationship with your family?” blank = no response or skipped
1 = “Not at all close”
2
3 = “Moderately close”
4
5 = “Very close”

Q41_#_# “When the following problems arise, who do you turn to? (Select all that apply)”
1 = TRUE; 2 = FALSE

Q41_1 = “Academic problems”
Q41_2 = “Emotional problems (e.g. feeling sad, anxious)”
Q41_3 = “Financial problems”
Q41_4 = “Health problems (e.g. illness, nutrition, fitness)”
Q41_5 = “Life issues (e.g. identity struggles, career choices, life purpose)”
Q41_6 = “Relationship problems (e.g. romantic, friend, and family)”
blank = no response or skipped

1 = “Adviser (e.g., academic adviser, resident adviser)”
2 = “Friend or roommate”
3 = “Instructor (e.g., professor, teaching assistant, coach)”
4 = “Parent or family member”
5 = “Romantic partner”
6 = “Professional (e.g., physician, counselor, clergy)”
7 = “I would not seek help from these sources for this problem”

Q42 "To what degree do you feel connected to your college or university?" blank = no response or skipped
1 = "Not at all connected"
2
3 = "Moderately connected"
4
5 = "Very connected"

Q43 "To what degree does the financial support you receive from all sources (including scholarship, employment income, financial aid, parent or family support) meet your needs?" blank = no response or skipped
1 = "Does not meet my needs at all"
2
3 = "Meets my needs moderately well"
4
5 = "Meets all of my needs"

Section Intro "Please reflect on the most stressful period of time that you have experienced in the past 12 months, including the present day. While it may be difficult to choose just one time, please think back on your experiences over the past 12 months and identify a single period when you were most upset, distressed or overwhelmed."

Q44 "In which month did this most stressful period begin?" blank = no response or skipped

NOTE: this was programmed so that the preceding 12 months was adjusted to end with the month in which student was participating in the survey

"February, 2010"
"March, 2010"
"April, 2010"
"May, 2010"
"June, 2010"
"July, 2010"
"August, 2010"
"September, 2010"
"October, 2010"
"November, 2010"
"December, 2010"
"January, 2011"
"February, 2011"
"March, 2011"

"April, 2011"

Q45 "Are you currently in the stressful period?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q46 "For how long did this most stressful period last or how long has it lasted?" blank = no response or skipped
1 = "A day or less"
2 = "More than a day to one week"
3 = "More than a week to one month"
4 = "More than one month to three months"
5 = "More than three months to six months"
6 = "More than 6 months"

Q47u "Please briefly describe this stressful period. Recall the context of the experience (i.e., what was occurring, where you were, how you were feeling). Provide only as much detail as you feel comfortable sharing."
(text; blank = no response or skipped)

Q48 "Of the following categories, which best describe the contributors to this stressful period? (Select all that apply)" blank = no response or skipped
1 = TRUE; 2 = FALSE

Q48_1 = "Academics"
Q48_2 = "Death of a close family member or friend (excluding suicide)"
Q48_3 = "Discrimination"
Q48_4 = "Drug or alcohol overuse or addiction"
Q48_5 = "Family problems"
Q48_6 = "Financial problems"
Q48_7 = "Friendship problems"
Q48_8 = "Gender identity concerns"
Q48_9 = "Legal trouble or violation of the law"
Q48_10 = "Life transition (e.g. changing jobs, switching schools, new care-taking responsibilities)"
Q48_11 = "Emotional health problems"
Q48_12 = "Physical health problems"
Q48_13 = "Problems at work"
Q48_14 = "Problems experienced by close friend or family member"
Q48_15 = "Relationship violence"
Q48_16 = "Romantic relationship problems"
Q48_17 = "Sexual assault"
Q48_18 = "Sexual orientation concerns"

Q48_19 = “Suicide of a close family member or friend”
Q48_20 = “Other traumatic experience (e.g. car accident, natural disaster)”
Q48_21 = “Other, please specify:”

Q48_21u (no prompt; provided for “Other, please specify:” response to Q48_21)
[Q48_21 = 1] (text; blank = no response or skipped)

Q49 “To what extent did this contribute to your level of stress or feelings of distress”?
blank = no response or skipped
[Q48_(1 – 21)]
1 = “Not at all”
2
3 = “Moderately”
4
5 = “Very much”

Q49_1 = “Academics”
Q49_2 = “Death of a close family member or friend (excluding suicide)”
Q49_3 = “Discrimination”
Q49_4 = “Drug or alcohol overuse or addiction”
Q49_5 = “Family problems”
Q49_6 = “Financial problems”
Q49_7 = “Friendship problems”
Q49_8 = “Gender identity concerns”
Q49_9 = “Legal trouble or violation of the law”
Q49_10 = “Life transition (e.g. changing jobs, switching schools, new care-taking responsibilities)”
Q49_11 = “Emotional health problems”
Q49_12 = “Physical health problems”
Q49_13 = “Problems at work”
Q49_14 = “Problems experienced by close friend or family member”
Q49_15 = “Relationship violence”
Q49_16 = “Romantic relationship problems”
Q49_17 = “Sexual assault”
Q49_18 = “Sexual orientation concerns”
Q49_19 = “Suicide of a close family member or friend”
Q49_20 = “Other traumatic experience (e.g. car accident, natural disaster)”
Q49_21 = “Other, please specify:”

Q49_21u (no prompt; provided for “Other, please specify:” response to Q49_21)
[Q49_21 = 1] (text; blank = no response or skipped)

Q50 "Which of the following behaviors or attitudes did you use to try to manage this stressful period? (Select all that apply)" blank = no response or skipped
1 = TRUE; 2 = FALSE

Q50_1 = "Acknowledging and allowing myself to feel my emotions"
Q50_2 = "Creating a strategy or plan of action"
Q50_3 = "Distracting myself with work, school, or leisure activities"
Q50_4 = "Eating healthy"
Q50_5 = "Exercising"
Q50_6 = "Focusing on a positive aspect of the situation or a lesson learned"
Q50_7 = "Prayer, meditation, or spirituality"
Q50_8 = "Sleeping"
Q50_9 = "Suppressing or avoiding my emotions"
Q50_10 = "Other, please specify:"

Q50_10u (no prompt; provided for "Other, please specify:" response to Q50_10)
[Q50_10 = 1] (text; blank = no response or skipped)

Q51 "How helpful did you perceive this method of managing stress to be for you?" blank = no response or skipped
[Q50 = 1 – 10]
1 = "Not at all"
2
3 = "Moderately"
4
5 = "Very much"

Q51_1 = "Acknowledging and allowing myself to feel my emotions"
Q51_2 = "Creating a strategy or plan of action"
Q51_3 = "Distracting myself with work, school, or leisure activities"
Q51_4 = "Eating healthy"
Q51_5 = "Exercising"
Q51_6 = "Focusing on a positive aspect of the situation or a lesson learned"
Q51_7 = "Prayer, meditation, or spirituality"
Q51_8 = "Sleeping"
Q51_9 = "Suppressing or avoiding my emotions"
Q51_10 = "Other, please specify:"

Q52 "From whom did you seek help or support in dealing with this stressful period? (Select all that apply)" blank = no response or skipped
1 = TRUE; 2 = FALSE

Q52_1 = “Academic Adviser”
Q52_2 = “Clergy”
Q52_3 = “Coach”
Q52_4 = “Family member”
Q52_5 = “Friend, peer, or roommate”
Q52_6 = “Alternative medical provider (e.g., acupuncturist, naturopathic doctor, massage therapist)”
Q52_7 = “Instructor (e.g., professor, teaching assistant)”
Q52_8 = “Medical provider (e.g., doctor, nurse practitioner)”
Q52_9 = “Psychiatrist”
Q52_10 = “Psychologist, counselor, or social worker”
Q52_11 = “Resident Adviser”
Q52_12 = “Romantic partner”
Q52_13 = “Other, please specify:”
Q52_14 = “I did not seek help from anyone”

Q52_13u (no prompt; provided for “Other, please specify:” response to Q52_13)
[Q52_13 = 1] (text; blank = no response or skipped)

Q53 “Which factors influenced your decision to seek help from this person or these people? (Select all that apply)” blank = no response or skipped
[Q52 = 1 -13; skip if Q52 = 14 or blank]
1 = TRUE; 2 = FALSE

Q53_1 = “They had expertise in this area”
Q53_2 = “I thought they would empathize or listen to me”
Q53_3 = “They had gone through this experience before”
Q53_4 = “I was referred to them”
Q53_5 = “I didn't know where else to turn”
Q53_6 = “They appeared safe to confide in”
Q53_7 = “I had received help from them before”
Q53_8 = “They were easily accessible”
Q53_9 = “Other, please specify:”

Q53_9u (no prompt; provided for “Other, please specify:” response to Q53_9)
[Q53_9 = 1] (text; blank = no response or skipped)

Q54 “Did you see this person or these people on-campus? (i.e., were they affiliated with your college or university?)” blank = no response or skipped
[Q52 = 2, 6, 8, 9, or 10]
1 = “Yes”
2 = “No”

Q54_2 = “Clergy”
Q54_6 = “Alternative medical provider (e.g., acupuncturist, naturopathic doctor, massage therapist)”
Q54_8 = “Medical provider (e.g., doctor, nurse practitioner)”
Q54_9 = “Psychiatrist”
Q54_10 = “Psychologist, counselor, or social worker”

Q55 “Why did you choose not to seek help or support from anyone during this stressful period? (Select all that apply)” blank = no response or skipped
[Q52 = 14]
1 = TRUE; 2 = FALSE

Q55_1 = “I did not think that it would be helpful to talk to anybody about it”
Q55_2 = “I did not think I needed support or help”
Q55_3 = “I did not want anyone to interfere or try to help”
Q55_4 = “I typically do not share my personal concerns with other people”
Q55_5 = “I did not want to burden other people”
Q55_6 = “I felt ashamed or embarrassed”
Q55_7 = “I was worried that they would judge me or think of me differently”
Q55_8 = “I did not feel like there was anyone I could talk to”
Q55_9 = “I thought there could be negative consequences for seeking help (e.g., being forced into treatment, losing my job, academic setbacks)”
Q55_10 = “I have had a prior negative experience seeking help or support”
Q55_11 = “Other, please specify:”

Q55_11u (no prompt; provided for “Other, please specify:” response to Q55_11)
[Q55_11 = 1] (text; blank = no response or skipped)

Q56 “Why did you choose not to seek professional help during this stressful period? (Select all that apply)” blank = no response or skipped
[Q52 = 1, 3 - 5, 7, 11 - 14; skip if Q52 = 2, 6, 8, 9 or 10]
1 = TRUE; 2 = FALSE

Q56_1 = “It did not occur to me to seek professional help”
Q56_2 = “I did not feel a need for professional help”
Q56_3 = “I did not know how to access professional help”
Q56_4 = “I did not think that I could afford professional help”
Q56_5 = “Seeking professional help is not acceptable in my family or my family’s culture”
Q56_6 = “Seeking professional help is not acceptable in my peer culture or friend group”
Q56_7 = “I was afraid my culture or background would not be understood”
Q56_8 = “I did not think that professional help would be useful”

Q56_9 = “I was worried about the potential consequences of seeking professional help on my future academic and career opportunities”
Q56_10 = “I did not think professional help was available”
Q56_11 = “I thought it would take too long to be seen by a professional”
Q56_12 = “I have had a prior negative experience seeking professional help or support”
Q56_13 = “Other, please specify:”

Q56_13u (no prompt; provided for “Other, please specify:” response to Q56_13) [Q56_13 = 1] (text; blank = no response or skipped)

Q57 “How important was the following in helping you to reach out for support during this stressful time?” blank = no response or skipped
1 = “Not at all important”
2
3 = “Moderately important”
4
5 = “Very important”

Q57_1 = “Blogging”
Q57_2 = “Email”
Q57_3 = “In person contact”
Q57_4 = “Gaming connections”
Q57_5 = “Phone”
Q57_6 = “Social networking (e.g., Facebook, Twitter)”
Q57_7 = “Text message”
Q57_8 = “Videochat”
Q57_9 = “Other, please specify:”

Q57_9u (no prompt; provided for “Other, please specify:” response to Q57_9) [Q57_9 = 1] (text; blank = no response or skipped)

Section Intro “Now please focus on the "worst point" (when you were experiencing the most intense distress) during the stressful period that you’ve been focusing on.”

Q58u “Please briefly describe this worst point.” (text; blank = no response or skipped)

Q59 “At the worst point during this stressful period, how would you rate the following:”

Q59a “How emotionally distressed were you?”
blank = no response or skipped
1 = “Not at all distressed”
2

3 = “Moderately distressed”
4
5 = “Very distressed”

Q59b “How disrupted were you in your day-to-day functioning?”
blank = no response or skipped
1 = “Not at all disrupted”
2
3 = “Moderately disrupted”
4
5 = “Very disrupted”

Q60 “At the worst point during this stressful period, how did your social behaviors change?” blank = no response or skipped
1 = “I spent a lot less time socializing”
2
3 = “No change”
4
5 = “I spent a lot more time socializing”

Q61 “At the worst point during this stressful time, when approaching the challenges you were facing:”

Q61a “How critical were you of yourself?”
blank = no response or skipped
1 = “Not at all critical”
2
3 = “Moderately critical”
4
5 = “Very critical”

Q61b “How capable were you of managing these challenges?”
blank = no response or skipped
1 = “Not at all capable”
2
3 = “Moderately capable”
4
5 = “Very capable”

Q61c “How motivated were you to manage these challenges?”
blank = no response or skipped
1 = “Not at all motivated”
2

3 = “Moderately motivated”
4
5 = “Very motivated”

Q61d “How meaningful did you view your life to be?”
blank = no response or skipped
1 = “Not at all meaningful”
2
3 = “Moderately meaningful”
4
5 = “Very meaningful”

Q61e “To what extent were you able to understand what needed to be done to face these challenges?”
blank = no response or skipped
1 = “Not at all able to understand”
2
3 = “Moderately able to understand”
4
5 = “Very able to understand”

Q61f “How much did you feel you were a burden on others?”
blank = no response or skipped
1 = “Not at all a burden”
2
3 = “Moderately a burden”
4
5 = “Very much a burden”

Q61g “How understood by others did you feel?”
blank = no response or skipped
1 = “Not at all understood”
2
3 = “Moderately understood”
4
5 = “Very understood”

Q61h “How cared for by others did you feel?”
blank = no response
1 = “Not at all cared for”
2
3 = “Moderately cared for”
4

5 = “Very cared for”

Q61i “How much did you feel that you could count on others?”
blank = no response or skipped
1 = “Not at all able to count on others”
2
3 = “Moderately able to count on others”
4
5 = “Very much able to count on others”

Q61j “How comfortable did you feel making new connections with others?”
blank = no response or skipped
1 = “Not at all comfortable”
2
3 = “Moderately comfortable”
4
5 = “Very comfortable”

Section Intro “In this section we hope to learn more about what you may have experienced during the stressful period that you identified.”

Q62 “During the stressful period, did you engage in any of the following behaviors? (Select all that apply)” blank = no response or skipped
1 = TRUE; 2 = FALSE

Q62_1 = “Getting into fights”
Q62_2 = “Increased gambling”
Q62_3 = “Increased internet use or gaming”
Q62_4 = “Increased use of drugs or alcohol”
Q62_5 = “Risk-taking behavior (e.g., drunk driving, speeding)”
Q62_6 = “Risky sexual behavior (e.g., unprotected sex with an untested partner, sexual contact with strangers or while intoxicated)”
Q62_7 = “Severely restricted or excessive eating”
Q62_8 = “Self-injury (e.g., intentional cutting, burning)”
Q62_9 = “Significant drop in academic performance”
Q62_10 = “Violating the law or violating school policies”
Q62_11 = “None of the above”

Q63 “During the stressful period, did you have any thoughts similar to the following? (Select all that apply)” blank = no response or skipped
1 = TRUE; 2 = FALSE

Q63_1 = "This is all just too much"

Q63_2 = "I wish this would all end"
Q63_3 = "I have to escape"
Q63_4 = "I wish I was dead"
Q63_5 = "I want to kill myself"
Q63_6 = "I might kill myself"
Q63_7 = "I will kill myself"
Q63_8 = I did not have any thoughts like these

Q64 "During this stressful period, did you seriously consider attempting suicide?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q65 "When these thoughts were at their most intense, how strong was your intent to kill yourself?" blank = no response or skipped
[Q64 = 1]
1 = "Not at all strong"
2
3 = "Moderately strong"
4
5 = "Very strong"

Q66 "During this stressful period, did you do any of the following? (Select all that apply)" blank = no response or skipped
[Q64 = 1]
1 = TRUE; 2 = FALSE

Q66_1 = "Investigated ways to kill myself"
Q66_2 = "Formed a specific plan for attempting suicide"
Q66_3 = "Gathered the material for a suicide attempt"
Q66_4 = "Wrote a suicide note but did not post it or leave it where others might read it"
Q66_5 = "Wrote a suicide note and shared it or posted it"
Q66_6 = "Wrote a will or otherwise put my affairs in order"
Q66_7 = "Formed a suicide pact with others"
Q66_8 = "Did a practice run of a suicide attempt"
Q66_9 = "Began a suicide attempt, then changed my mind"
Q66_10 = "None of the above"

Q67 "During this stressful period, did you attempt suicide?" blank = no response or skipped
1 = "Yes"
2 = "No"

Q68 "How many attempts did you make during this time?" blank = no response or skipped
[Q67 = 1]

1 = "1"
2 = "2"
3 = "3"
4 = "4"
5 = "5 or more"

Q68a "For how many of your attempts did you receive emergency medical attention?"
[Q68 = 1, 2, 3, 4, or 5 or more]
(pop out for Q68; blank = no response or skipped)
0 = "none"
1 = "1"
2 = "2"
3 = "3"
4 = "4"
5 = "5 or more"

Q69 "Which of these statements describe your intentions at the time of the attempt(s)?"
[Q67 = 1] blank = no response or skipped
1 = "I made a serious attempt to kill myself and I intended to die"
2 = "I tried to kill myself but knew that I might survive using the method I chose"
3 = "I was ambivalent and partly wanted to die but also partly wanted to live"
4 = "I mostly wanted to live but a small part of me wanted to die"
5 = "I did not intend to die"

Q70u "How do you feel now about surviving the attempt(s)?" (text; blank = no response or skipped)
[Q67 = 1]

Q71 "Which of the following best describe your reasons for attempting suicide? (Select all that apply)" blank = no response or skipped
[Q67 = 1]
1 = TRUE; 2 = FALSE

Q71_1 = "It was impulsive and not really a choice"
Q71_2 = "I wanted others to pay attention and take me seriously"
Q71_3 = "I wanted to make others feel guilty or sorry"
Q71_4 = "I wanted to show others the extent of my pain or unhappiness"
Q71_5 = "I wanted to get help"
Q71_6 = "My emotional pain became unbearable"

Q71_7 = “I did not know what else to do”
Q71_8 = “I had nothing else to live for”
Q71_9 = “I felt like I was a burden on people around me”
Q71_10 = “Other, please specify:”

Q71_10u (no prompt; provided for “Other, please specify:” response to Q71_10)
[Q71_10 = 1] (text; blank = no response or skipped)

Q72 “How would you describe the role of drugs or alcohol in your most recent suicide attempt? (Select all that apply)” blank = no response or skipped
[Q67 = 1]
1 = TRUE; 2 = FALSE

Q72_1 = “I was not using alcohol or drugs before or during my attempt”
Q72_2 = “I intended to overdose with alcohol or drugs”
Q72_3 = “I intended to use alcohol or drugs to reduce my inhibitions or fears about attempting suicide”
Q72_4 = “My attempt was not planned in advance and may have happened because I was using alcohol or drugs”
Q72_5 = “I was using alcohol or drugs but they were not related to my attempt”
Q72_6 = “Addiction to alcohol or drugs was a reason for my attempt”

Q73 “How would you describe your current thoughts about suicide?”
[Q29 = 1] blank = no response or skipped
1 = “I am no longer considering suicide and I doubt that I will ever again”
2 = “I am no longer considering suicide but I might in the future”
3 = “I am still considering suicide, but not very seriously”
4 = “I am currently seriously considering a suicide attempt”

Section Intro “In this final, very brief section of the survey we hope to learn about what was helpful or could have been helpful in increasing your ability to manage during your most stressful time.”

Q74 “From the list below, please indicate how the following impacted your ability to cope during the most stressful time?” blank = no response or skipped
1 = “Considerably reduced my ability to cope”
2
3 = “Did not impact my ability to cope”
4
5 = “Considerably improved my ability to cope”

Q74_1 = “Connection with your friends”
Q74_2 = “Connection with your family”

Q74_3 = “Connection to religion, spirituality or a higher power”
Q74_4 = “Connection with your college or university”
Q74_5 = “Connection with a mental health professional”
Q74_6 = “Having experienced a similar situation before”
Q74_7 = “Involvement in extracurricular groups, activities, or communities”
Q74_8 = “Resources available on campus (e.g., student services, health center, counseling center, career center)”

Q75 “Do you think you will be less equipped or better equipped to handle future stress as a result of your experiences during the past year?” blank = no response or skipped
1 = “Considerably less equipped”
2
3 = “No change”
4
5 = “Considerably more equipped”

Q76 “After going through this stressful period, how likely would you be to seek help through your campus counseling center for future stressful experiences?” blank = no response or skipped
1 = “Not at all likely”
2
3 = “Neither more nor less likely”
4
5 = “Very likely”

Q77 “If you had a friend who was going through similarly stressful experiences, how likely would you be to refer her or him to the campus counseling center?” blank = no response or skipped
1 = “Not at all likely”
2
3 = “Neither more nor less likely”
4
5 = “Very likely”

Q78u “What could your college or university have provided you or done differently to better help you manage during this stressful time?” (text; blank = no response or skipped)

Q79u “In what ways do you feel like you have grown from going through this stressful experience and / or what personal strengths have you become more aware of?” (text; blank = no response or skipped)

Appendix C: HLM Results Tables

Preliminary Analysis—Research Questions 1 through 3

Final model of demographic and historical variables to include in final model predicting membership in the Nonideator Ideator, and Actor groups.

The outcome variable is SUICIDE

Fixed Effects	*Coefficient*	*se*	*p-value*	*Odds Ratio*	*(OR Inverted)*
For Category 1[a]					
Model for school means, $\beta_{0j(1)}$					
INTERCEPT, $\gamma_{00(1)}$	2.193	0.049	0.000**	8.96	
Model for school slopes, $\beta_{ij(1)}$					
GRAD, $\gamma_{10(1)}$	0.121	0.059	0.041*	1.129	
AGE, $\gamma_{20(1)}$	0.082	0.024	0.001 *	1.085	
PRIORATMPT, $\gamma_{30(1)}$	-1.434	0.067	0.000**	0.238	(4.202)
BISEXUAL, $\gamma_{40(1)}$	-0.682	0.097	0.000**	0.506	(1.976)
QUESTIONING, $\gamma_{50(1)}$	-0.879	0.165	0.000**	0.415	(2.409)
For Category 2 [a]					
Model for school means, $\beta_{0j(2)}$					
INTERCEPT, $\gamma_{00(2)}$	-2.298	0.131	0.000**	0.100	(9.960)
Model for school slopes, $\beta_{ij(2)}$					
GRAD, $\gamma_{10(2)}$	-0.355	0.157	0.024*	0.701	(1.427)
AGE, $\gamma_{20(2)}$	-0.077	0.060	0.201	0.926	(1.079)
PRIORATMPT, $\gamma_{30(2)}$	2.084	0.121	0.000**	8.035	
BISEXUAL, $\gamma_{40(2)}$	0.136	0.189	0.473	1.145	
QUESTIONING, $\gamma_{50(2)}$	0.161	0.317	0.612	1.174	

*$p \leq .05$ **$p \leq .001$

[a]Note: Category 1 consists of P(*Nonideators*)/P(*Ideators*); Category 2 consists of P(*Actors*)/P(*Ideators*)

Research Questions 1 through 3

Main and interaction effects of self-reported distress and mindfulness and likelihood of endorsing suicidal thoughts and behaviors

The outcome variable is SUICIDE *Fixed Effects*	*Coefficient*	*se*	*p-value*	*Odds Ratio*	*(OR Inverted)*
For Category 1[a]					
Model for school means, $\beta_{0j(1)}$					
INTERCEPT, $\gamma_{00(1)}$	2.747	0.090	0.000**	15.598	
MEANATMPT, $\gamma_{01(1)}$	0.158	1.090	0.886	1.171	
Model for school slopes, $\beta_{ij(1)}$					
GRAD, $\gamma_{10(1)}$	0.085	0.066	0.197	1.088	
AGE, $\gamma_{20(1)}$	0.049	0.026	0.063	1.049	
PRIORATMPT, $\gamma_{30(1)}$	-1.093	0.074	0.000**	0.335	(2.985)
DISTRESS, $\gamma_{40(1)}$	-0.817	0.033	0.000**	0.442	(2.262)
MINDFULNESS, $\gamma_{50(1)}$	0.130	0.007	0.000**	1.139	
DSTRSxMF, $\gamma_{60(1)}$	-0.008	0.006	0.213	0.992	(1.008)
BISEXUAL, $\gamma_{70(1)}$	-0.523	0.106	0.000**	0.593	(1.686)
QUESTIONING, $\gamma_{80(1)}$	-0.606	0.179	0.001*	0.546	(1.832)
For Category 2 [a]					
Model for school means, $\beta_{0j(2)}$					
INTERCEPT, $\gamma_{00(2)}$	-2.452	0.216	0.000**	0.086	(11.623)
MEANATMPT, $\gamma_{01(2)}$	1.286	2.290	0.576	3.617	
Model for school slopes, $\beta_{ij(2)}$					
GRAD, $\gamma_{10(2)}$	-0.322	0.168	0.055	0.724	(1.381)
AGE, $\gamma_{20(2)}$	-0.111	0.065	0.087	0.895	(1.117)
PRIORATMPT, $\gamma_{30(2)}$	2.063	0.127	0.000**	7.870	
DISTRESS, $\gamma_{40(2)}$	0.083	0.101	0.409	1.087	
MINDFULNESS, $\gamma_{50(2)}$	0.0005	0.019	0.979	1.001	
DSTRSxMF, $\gamma_{60(2)}$	-0.007	0.017	0.658	0.993	(1.007)
BISEXUAL, $\gamma_{70(2)}$	0.297	0.192	0.122	1.346	
QUESTIONING,$\gamma_{60(2)}$	0.268	0.329	0.416	1.308	

*$p \leq .05$ **$p \leq .001$

[a]Note: Category 1 consists of P(*Nonideators*)/P(*Ideators*); Category 2 consists of P(*Actors*)/P(*Ideators*)

Preliminary Analysis—Research Question 4

Final model of demographic and historical variables to include in final model predicting strength of intent.

The outcome variable is STRNGTHINTENT				
Fixed Effect	*Coefficient*	*se*	*t Ratio*	*p-value*
Model for school means, β_{0j}				
INTERCEPT, γ_{00}	2.883	0.101	28.566	0.000**
Model for school slopes, β_{ij}				
GRAD, γ_{10}	-0.250	0.094	-2.657	0.008**
AGE, γ_{20}	0.095	0.036	2.603	0.010*
PRIORATMPT, γ_{30}	0.746	0.069	10.854	0.000**
Random Effect	*Variance Component*	*df*	*Chi-square*	*p-value*
INTRCEPT1, μ_{0j}	0.0005	74	61.83	>.50
Level-1 effect, r_{ij}	1.1642			

*$p \leq .05$ **$p \leq .001$

Research Question 4

Association of main and interaction effects of self-reported distress and mindfulness on strength of intent to commit suicide.

The outcome variable is STRNGTHINTENT *Fixed Effect*	*Coefficient*	*se*	*t Ratio*	*p-value*
Model for school means, β_{0j}				
INTERCEPT, γ_{00}	2.753	0.056	49.152	0.000**
Model for school slopes, β_{ij}				
GRAD, γ_{10}	-0.235	0.090	-2.60	0.010*
AGE, γ_{20}	0.085	0.038	2.260	0.024*
PRIORATMPT, γ_{30}	0.765	0.069	11.108	0.000**
DISTRESS, γ_{40}	0.256	0.049	5.256	0.000**
MINDFULNESS, γ_{50}	-0.007	0.009	-0.797	0.425
DSTRSxMF, γ_{60}	-0.005	0.007	-0.753	0.452

Random Effect	*Variance Component*	*df*	*Chi-square*	*p-value*
INTRCEPT1, μ_{0j}	0.0022	74	66.725	>.50
Level-1 effect, r_{ij}	1.1264			

*$p \leq .05$ **$p \leq .001$

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